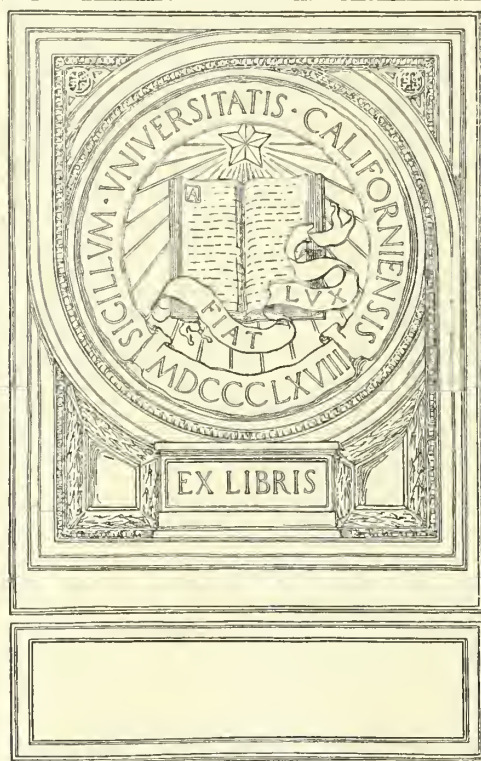


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THE HISTORY OF THE MODERN PUBLIC HEALTH MOVEMENT

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CROWLEY

The modern public health movement is deeply rooted in its historical background, and a full appreciation of its significance is dependent upon a knowledge of its history. For this reason, any treatise dealing with the general subject of public health must of necessity entail an account of its historical evolution. The status of public health practice, today as in the past, is dynamic rather than static. Indeed, the story of the development of public health is a most interesting one, and it may be safely said that the last chapter is yet to be written. It is the intention of the narrator to review briefly the high lights of this fascinating story.

THE ORIGINS OF PUBLIC HEALTH

In order to obtain a clear cut perspective of present day public health practice, we must retrace our steps all the way back to Biblical, Ancient, and Medieval times, where we encounter its origins. Winslow¹ refers to this period as the Dark Ages of Public Health.

During Biblical times the Mosaic Law prescribed certain public health measures in the fields of personal hygiene and environmental sanitation for the benefit of the Hebrews. According to the Old Testament (Leviticus) the Jews had some appreciation of the importance of the contagious nature of certain diseases for here we find certain principles of isolation and quarantine clearly enunciated. For instance, the

lepers were required to wear the so-called Lazarus bell in order to warn passersby of their presence.

We may now pass on to an account of public health practice in Ancient Greece. At that time emphasis was placed upon personal hygiene. All boys were required to take physical exercises regularly and the principle of a sound mind in a sound body was propounded. Other personal hygiene activities included: care of the skin by washing and bathing, swimming, massage, physical cleanliness, proper diet, rest, and regulation of the sexual life.

In Ancient Rome, the development of environmental sanitation reached a high point of effectiveness. Among the public health activities of this period may be mentioned the following: Installation and maintenance of a sanitary system of sewerage, street cleaning, abatement of nuisances such as disposal of dead animals and other decaying organic matter, destruction of spoiled foods, supervision of baths, taverns, and houses of prostitution, and, finally, the prevention of water pollution.

The public health practices of the Dark Ages, namely, the development of personal hygiene in Ancient Greece, of public sanitation in Ancient Rome, and the practice of isolation and quarantine in Biblical times, may be considered as the forerunners of the modern public health movement.¹

Unfortunately, progress in public health did not continue uninterrupted; as a matter of fact, it received quite a set-back in the Middle Ages when the practice of Asceticism and Monasticism prevailed. It was not until the eighteenth century that any public health measure of any consequence was put into effect. That was the practice

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of inoculation against smallpox. In 1798 Edward Jenner announced his discovery of vaccination. At the London Smallpox Hospital, over 3000 persons were inoculated over a two year period, as this disease prevailed in epidemic form at that time.

THE THREE ERAS OF THE MODERN PUBLIC HEALTH MOVEMENT

For all practical purposes, the evolution of the modern public health movement may be divided into three fairly distinct eras, namely: First era: 1850—1870; second era, 1870—1915-20; third era, 1920—present.

According to Winslow,¹ the modern public health movement began with the advent of sanitary knowledge in 1850. The scientific spirit and humanitarian principles were the two factors responsible for the birth of the movement.¹

However, as far back as the eighteenth century, progress in the field of sanitation received a tremendous impetus by the campaign for prison reform under the direction of John Howard in England. He made a sanitary survey of the prisons and found them in the most appalling condition. Many of them lacked a water supply, adequate ventilation, and a proper excreta disposal system. The incidence of typhus fever was excessively high. As a result of this survey, many corrections of insanitary conditions were made.

The next great step forward in the progress of sanitation occurred in 1785 in connection with the campaign for the protection of the industrial workers of England. As a result, the so-called English Poor Laws were enacted, which provided for widespread improvement of sanitary conditions as well as the control of contagious diseases in industrial groups.

In this connection, the work of two other great English sanitarians must be mentioned, namely, Sir Edwin Chadwick and Sir John Simon. Chadwick was a lawyer and sociologist, and served in the capacity of Secretary of the Poor Law Commission. He was responsible for a survey of sanitary and health conditions in England, which was carried out by physicians. The point of major interest was the relationship be-

tween filth, poverty, and epidemic diseases. He published the results of his work in a volume entitled: "Sanitary Conditions of Great Britain." In 1848 the General Board of Health was organized and its membership included Chadwick. This Body initiated the movement for a safe water supply and sanitary disposal of sewage.

Simon served as Medical Officer of London for seven years and later on as Central Medical Officer to the General Board of Health. He was responsible for the enactment of valuable public health legislation, especially the so-called Sanitary Act of 1866 which "gave powers to local authorities to suppress all kinds of nuisances and to provide all such works and establishments as the public health primarily requires."

FIRST ERA OF THE MODERN PUBLIC HEALTH MOVEMENT (1850-1870)

We shall now turn our attention to the development of public health in the United States. Very little progress was made during the period extending from 1800 to 1850. Winslow¹ states that the movement began in this country in 1850 with the advent of the publication of Lemuel Shattuck's "Report of the Massachusetts Sanitary Commission." Shattuck was not a physician, but a statistician and sociologist; notwithstanding, he had a keen appreciation of the public health problems of that period. Epidemics of smallpox, yellow fever and typhus ravaged the land at that time. The tuberculosis mortality rate for Massachusetts numbered 300 per 100,000 population. The public health activities included the abatement of nuisances, prevention of overcrowding, street cleaning, regulation of slaughter houses, public baths and pig sties.² Following are some of Shattuck's outstanding recommendations:¹ Establishment of a system of sanitary police with state and local health departments, careful collection and analysis of vital statistics, sanitation of towns and buildings, school hygiene programs, special investigation of tuberculosis, supervision of mental disease by boards of health, establishment of nurses training schools, teaching of sanitary sci-

ence in medical schools, the establishment of competent local boards of health, education of the public in health matters, routine physical examinations, and the keeping of family records of illness.

Shattuck was indeed a visionary individual and as a result of his investigations, the first State Board of Health was established in Massachusetts in 1869. In 1864 a great step forward was made in the field of municipal health practice when Dr. Stephen Smith made a thorough survey of sanitary conditions in New York City. This was reported in a very interesting manner in his book entitled, "The City That Was."³ Political interference in the administration of the health program prevailed at that time, and an exposé of the existing insanitary conditions led directly to the enactment of the Metropolitan Health Law, authorizing the following reforms:² (1) Underdrainage of the soil; (2) removal of cellar populations to homes in open air and sunlight; (3) removal of offensive industries; (4) enforcement of rigid sanitary regulations.

During this period, knowledge regarding the causation of contagious diseases was very meager indeed. Many superstitions as well as erroneous ideas prevailed. It was believed, for instance, that diseases were caused by evil spirits, bad odors, the influence of the moon and stars, and the so-called "evil-eye." The miasmatic theory of disease was in vogue; that is, the belief that gases, odors and stench resulting from decomposed organic matter were responsible for the transmission of many contagious diseases. For example, marsh gas was credited with being the cause of diphtheria; malaria was associated with bad air from the swamps. Sewer gas was credited with being the cause of a number of diseases, notably diphtheria. Mental diseases had some connection with the influence of the moon and stars.

We may say that the abatement of nuisances constituted the chief public health activity of the first era of the modern public health movement, and the personnel consisted of solely the untrained police sanitary inspector.

SECOND ERA OF THE MODERN PUBLIC HEALTH MOVEMENT (1870-1920)

Up to this time, the control of epidemic diseases was not based on scientific facts, but the second chapter in the story of the history of public health changed the situation radically. This era was characterized by the great scientific discoveries of fundamental importance to modern public health practice and is generally referred to as the "Golden Age of Bacteriology." Koch and Pasteur may be singled out as the great personalities of this epoch, whose monumental contributions revolutionized the practice of public health.

The work of Pasteur is undoubtedly familiar to public health workers. He was the first to promulgate new ideas on contagion, and was responsible for the acceptance of the germ theory of disease. His early studies on the process of fermentation was due to the action of microbes, thus disproving the theory of spontaneous generations. In 1877 Pasteur demonstrated the etiology of anthrax. In 1881 Pasteur with Sternberg described the pneumococcus.

The principle of vaccination was one of Pasteur's outstanding contributions to public health knowledge. Although vaccination against smallpox had long been practiced before Pasteur's time, as we already know, no one really explained the underlying mechanism of action until he cleared up the mystery. He showed that the germs causing contagious diseases can be attenuated and that in overcoming these weakened germs, the body gains protection against the virulent ones. The Pasteur treatment for rabies is a practical application of this principle.

Robert Koch's name has been immortalized by virtue of his discovery of the tubercle bacillus in 1882. Another outstanding achievement credited to Koch is the discovery of tuberculin. Koch's postulates will go down in the annals of public health history as one of the greatest advances in bacteriology. In 1883 Koch discovered the cholera bacillus.

Among the other advances in bacteriology and parasitology of this period may be listed the following:⁴

1. Lister's application of the germ theory to antiseptics in surgery.
2. The work of Holmes and Semmelweis on the prevention of puerperal sepsis.
3. Discovery of the relationship of cholera to a contaminated water supply by Snow of London (1854).
4. The nature and mode of transmission of typhoid fever by William Budd.
5. Losch in 1875 ascribed tropical dysentery to an ameba.
6. In 1874 Ehrlich developed the aniline dyes for staining bacteria.
7. In 1879 Neisser found the gonococcus.
8. In 1884 Gaffky discovered the typhoid bacillus.
9. In 1884 Klebs-Loeffler discovered the diphtheria bacillus.
10. In 1888 von Behring discovered diphtheria antitoxin.
11. In 1894 the discovery of the germ of bubonic plague by Yersin.
12. In 1898 Grassi and Bignami identified the microbe of human malaria in the anopheles mosquito.
13. Ronald Ross discovered the vector of malaria.
14. Laveran found the malaria organism in patients.
15. Discovery of the mosquito as intermediary agent in the transmission of yellow fever by Agramonte, Lazear, and Findlay.
16. Schaudinn and Hoffmann discovered the *Treponema pallidum* in 1905.
17. In 1906 Wassermann discovered the complement fixation and perfected the Wassermann reaction.
18. The indictment of the body louse as the cause of typhus by Nicolle and his associates (1909).

The natural sequelae of the idea of germs causing contagious diseases was the practice of quarantine, isolation, and fumigation.⁵ Since these diseases were spread by direct personal contact and indirectly by articles freshly soiled with discharges containing the source of the infection, then such measures should be 100 per cent effective in checking the spread of the infection, according to the authorities at that

time. Accordingly, "shot-gun quarantine" was widely practiced and "pest houses" were in vogue. Quarantine stations for the examination of ship passengers and crews were usually built many miles away from ports.

In 1910 Charles Chapin wrote a treatise entitled, "The Sources and Modes of Infection," which was considered a landmark in the history of public health in America. He deprecated the value of terminal fumigation and recommended the following measures to be employed in the control of communicable diseases: (1) Search for carriers; (2) quarantine of contacts; (3) prompt isolation of early cases.

In the second era, environmental sanitation became second in importance to communicable disease control.² In 1892 W. H. Park of New York City introduced the new technic for the bacteriologic diagnosis of diphtheria. In 1895 the examination of the sputum of tuberculosis suspects became routine and tuberculosis was recognized as a communicable disease. Diphtheria antitoxin was put on the market in 1894.

In 1908 Evans introduced compulsory pasteurization of milk in Chicago. The first effective filter for purification of water was constructed for Lowell, Massachusetts in 1893.

The public health achievements of the second era were accomplished primarily in the fields of sanitary science and sanitary engineering and the control of communicable diseases was the chief activity of the health department. The personnel consisted of the laboratory worker trained in bacteriology and chemistry, and the more specialized sanitary officer. They were responsible for blocking the routes over which contagious diseases travel, such as a contaminated water and milk supply, insect carriers of disease producing germs, contaminated food supplies, and finally, social contact routes. The public health measures in effect were based on scientific facts. As a result, the mortality rates of the following contagious diseases dropped to a record low: tuberculosis, malaria, diphtheria, and smallpox.

THIRD ERA OF THE MODERN PUBLIC HEALTH
MOVEMENT (1920-PRESENT)

We come now to the third era which takes us up to the present time. This chapter in the history of preventive medicine is characterized chiefly by the shift of public health interest from the environment to the individual. Emphasis was placed on positive health and physical fitness; that is, the improvement of the health of the individual.

The results of the draft physical examinations during World War I, and the excessively high tuberculosis mortality rate jointly precipitated the movement for individual health protection and promotion. Three and one-half million young men were examined and the results were appalling. One-third of these men had so many serious physical defects that they could not be used for first line duty.

The tuberculosis mortality rate at that time was seven times higher than it is today. Periodic physical examinations of all adults by the family physician were urged and the early prevention and correction of any physical defects discovered. As a result, additional personnel had to be called in, in order to carry on these newer activities. The services of doctors, nurses, and dentists were required.

THE DEVELOPMENT OF COUNTY HEALTH
ORGANIZATIONS

A treatise on the history of the modern public health movement would not be complete if it did not incorporate a brief account of the development of county health organizations in the United States. A realization that public health service should be available to rural as well as urban populations was responsible, in a large measure, for the development of the county health movement. The county health movement of the past quarter of a century may be said to be the outstanding public health development in the United States from the standpoint of rural population.⁶

Two public health programs have stimulated the growth of the county health movement in this country, namely:⁶ (1) The typhoid fever program of the United States Public Health Service, under the direction

of L. L. Lumsden (1911); (2) the hookworm disease program in the South, of the Rockefeller Foundation, under the direction of Wickliffe Rose (1910-33).

During the period extending from 1890 to 1910, the typhoid mortality rate was excessively high, so that the control of this disease was a major public health problem. Sanitation was soon recognized as the most effective public health measure available in the control of this disease. In 1911, L. L. Lumsden, of the United States Public Health Service, was assigned the task of studying a typhoid epidemic which ravaged Yakima County, Washington. The typhoid mortality rate for this county at that particular time was 200 per 100,000 population (over five times that for the United States average), and it was decided that the incriminating agent was the prevailing insanitary conditions. Accordingly, an extensive campaign was carried on to correct these conditions, and it proved to be most effective in reducing both the morbidity and mortality rates for this disease. In order to provide continuous public health service, Lumsden recommended the establishment of a county health department and this was effected in 1911. Yakima County, Washington, claims the distinction of having the oldest county health department in the United States, but Jefferson County, Kentucky, and Guilford County, North Carolina also claim priority.

Through funds provided by John D. Rockefeller in 1910, a program for the study and control of hookworm in the South was undertaken. The Rockefeller Sanitary Commission under the direction of Wickliffe Rose was organized and took over the responsibility of administering this program. It extended over a five year period, the work being carried on in co-operation with the State Health Department. The first half of the campaign was devoted to the education of the medical profession and the public regarding the importance, prevalence, distribution, diagnosis, and treatment of hookworm disease. The latter half stressed sanitation and the establishment of county health departments by providing financial assistance.

The conclusion drawn from these studies and experiences was that only full time county health units could adequately provide health services and meet the individual needs of rural areas.

The growth of county health organizations has been very rapid; in 1918 there were 30 county health units in the United States operating on a full time basis, while in 1935 the number had increased to 762, and in 1940 to 1,577.

NEW PUBLIC HEALTH PROGRAMS OF THE THIRD ERA

The programs of the activities of present day health departments include the following: tuberculosis control, venereal disease control, communicable disease control, vital statistics, laboratory services, maternal-child hygiene, services for crippled children, school hygiene, adult hygiene, public health nursing, public health nutrition, public health dentistry, public health education, industrial hygiene, mental hygiene, cancer control, pneumonia control, housing, accident prevention, general sanitation, and sanitary engineering. A brief account of the development of some of the newer programs of major importance follows.

TUBERCULOSIS CONTROL

The first great step forward in tuberculosis control was the sanatorium movement initiated by Trudeau in 1885. Home nursing care for the tuberculous was originated by Osler in Baltimore in 1899. The first Society for the Prevention of Tuberculosis was organized by Flick in Philadelphia in 1892. Herman Biggs, a former New York State Health Commissioner, first inaugurated a well rounded public health program for the control of tuberculosis. Quoting from Winslow:¹ "It involved as fundamental the compulsory reporting of cases, the provision of laboratory facilities for diagnosis and a system of medical inspection, cleansing, and disinfection. It provided for an educational campaign through the use of specially prepared circulars of information and also the utilization of the public press and lectures for the dissemination of popular literature."

The National Tuberculosis Association was organized in the early part of the twentieth century and dedicated itself to the task of reducing the prevailing excessively high tuberculosis mortality rate. At the thirty-sixth annual meeting of the National Tuberculosis Association (1940), Chadwick,⁷ in his presidential address, took as his subject, "The Subjugation of Tuberculosis." Quoting from this address: "One of the great achievements of the twentieth century will be the subjugation of tuberculosis. We are far enough along in the campaign that started when the National Tuberculosis Association was organized thirty-six years ago to be quite certain that eventually victory will be won. In the early days of the Association, the stress was put upon treatment, later on prevention, then on health education and on case-finding—these together with research make up the forces that under one coordinated command are now in the field doing valiant work against the disease. The death rate has dropped 76 per cent in forty years."

The present day activities in the fight against tuberculosis include the following: case finding, isolation of open cases, prompt and adequate treatment, follow-up and rehabilitation, and public health education.⁸ Among the new tools for case-finding are the 4 x 5 inch and the 35 mm. miniature films used in mass surveys.^{9, 10} They are photographs of the fluoroscopic image of the chest and are preferable to the usual 14 x 17 inch films because of economy.

VENEREAL DISEASE CONTROL

The campaign for the control of venereal diseases had its beginning in France under the influence of Fournier in 1900 when the French Society of Sanitary and Moral Prophylaxis was established. In this country, the guiding spirit of the campaign was Prince A. Morrow, who organized a similar society in 1905. The discovery of the arsenicals in the treatment of syphilis and the sulfonamide derivatives in the treatment of gonorrhea proved to be two of the greatest achievements of the century in the control of venereal diseases.

The experience of the Army and Navy in dealing with the venereal diseases during World War I served as an impetus for the present day campaign. Through the provisions of the Social Security Act (1935), venereal disease control work was extended in a large majority of the states. In 1938 the United States Congress enacted the Venereal Disease Control Act which authorized the appropriation of funds to the states. These funds were to be allotted on the basis of population, extent of the venereal disease problem, and financial need.

The modern syphilis control program includes the following activities and facilities according to the United States Public Health Service.^{11, 12, 13}

1. A trained public health staff which knows how to deal with syphilis.
2. Regulations requiring reporting and follow-up on all cases of syphilis.
3. Facilities for treatment of all patients—for both those who can, and who cannot pay.
4. Free laboratory service available to all physicians and clinics.
5. Distribution of free anti-syphilitic drugs to all physicians and clinics.
6. Blood tests for all pregnant women and treatment where required.
7. Blood tests for all persons before marriage.
8. Blood tests in all complete physical examinations.
9. An educational program.
10. Repression of prostitution.

Regarding the role of venereal disease control in national defense, Parran¹⁴ states: "In every war the venereal diseases have been a serious drain on military efficiency. With federal aid under the Venereal Disease Control Act of 1938, there are now in operation more than three thousand treatment centers and more than two thousand diagnostic laboratories. Every state distributes free drugs to all physicians for treatment of their patients. As a part of the physical examination of every recruit for the Army under Selective Service, a serologic test for syphilis has been made."

MATERNAL CHILD HEALTH

The early workers in infant hygiene, namely Koplik in New York (1889), Herrgott, Variot and Budin in France (1890-1893), all advocated breast feeding of infants.¹ In 1909 the first American Conference for the Prevention of Infant Mortality was held in New Haven, which recommended the education of mothers in matters of sanitation and personal hygiene in the home. Other landmarks in the development of the child hygiene program are the following: Establishment of a Division of Child Hygiene in the New York City Department of Health in 1908; creation of the Federal Children's Bureau in 1912; enactment of the Sheppard-Towner Act for federal aid to local infant welfare work in 1922, and the organization of the American Child Health Association in 1922. The expansion of infant and pre-school welfare stations resulted from this renewed interest.

Among the chief public health activities responsible for the reduction in the United States infant mortality rate for the past quarter of a century are the following: (1) Education of mothers in infant care; (2) improved sanitation; (3) improvement in quality and quantity of prenatal care.

Regarding the maternal hygiene program, its main objectives include the following: (1) Reduction of maternal morbidity and mortality; (2) expansion of prenatal care; (3) accurate reporting of maternal deaths.

Title V of the Social Security Act has been highly instrumental in the general expansion of maternal child hygiene programs. This Act provides for an annual appropriation of \$3,800,000.00 to the states for the following purposes:

Part 1. For the organization of intensive efforts to reduce maternal and infant mortality and to promote the health of mothers and children.

Part 2. To meet the special needs of crippled children by providing diagnostic, corrective, and follow-up services for chil-

dren already crippled or suffering from conditions which may lead to crippling.

Part 3. The development of social service for homeless, neglected, and dependent children in danger of becoming delinquent in areas predominantly rural.

SCHOOL HYGIENE

Medical examination of school children was initiated in this country in Boston in 1894. This program was prompted by an outbreak of diphtheria in the schools, and the primary objective was the control of communicable diseases.

Present day school health programs include the following activities: medical examinations, prevention and early correction of physical defects, immunizations, health education among pupils and teachers, and sanitary supervision of school buildings.

It is considered good public health practice to concentrate attention on children in the early grades so as to correct physical defects early in the school life of the child so that they will not interfere with studies.

PUBLIC HEALTH NURSING

The development of public health nursing played a very important role in the evolution of the modern public health movement. The first Visiting Nursing Association was established in Boston in 1886. In 1892 the school nursing movement was initiated in London and tuberculosis nursing received a tremendous impetus in this country under the influence of Osler (1903). The tendency at that time was toward specialized nursing, such as infant welfare nursing, industrial nursing, school nursing, and tuberculosis nursing. The pendulum has swung in the opposite direction today and modern public health practice demands a generalized public health nursing service, especially in rural areas.

All programs of the county health department utilize the services of the nurse. The National Organization for Public Health Nursing has defined this activity thusly: "Public health nursing is an organized service (not for profit) rendered by graduate nurses to the individual, family, and community."

INDUSTRIAL HYGIENE

The industrial hygiene program is still in its infancy. The objectives of the program are: (1) To promote the personal hygiene of the industrial worker, and (2) to prevent health hazards through control of environment.

An abbreviated classification of occupational health hazards and disorders follows:

(1) Air conditions: (a) temperature, humidity, comfort zone; (b) pressure; (c) pollution such as dusts, gases, fumes, vapors, and bacteria. (2) Industrial-chemical poisons, dermatoses; (3) injuries.

Special programs for the control of venereal diseases and tuberculosis are in effect in many industries.

During the present national emergency, the importance of industrial hygiene is receiving particular attention because the authorities realize that men engaged in industries essential to the defense of our nation are just as important as the men in uniform. The responsibility for safeguarding the health of the worker lies first in the hands of the State and local health or industrial authorities.¹⁴ The interest of the United States Public Health Service, the Army and the Navy, served as a tremendous impetus to the development of industrial hygiene programs in this country. Paul V. McNutt, Coordinator of Health, Welfare and Related Activities, National Defense Council,¹⁵ in a discussion of special problems in our health defense states: "The military services are responsible for the soldier, but public health is responsible for his ally, the industrial worker. In today's war, industrial mobilization and expansion make possible military mobilization and expansion. In the speeding up of industry, our responsibilities in the field of industrial hygiene are multiplying."

The responsibility of the public health nurse in industrial hygiene has assumed greater importance with the expansion of industry incident to national defense.¹⁶

MENTAL HYGIENE

This new activity of the modern public health movement has been incorporated in

many state health department programs in recent years. Clifford Beers, author of "A Mind that Found Itself," was instrumental in bringing about wide sweeping reforms in the administration of mental hospitals. Another noteworthy advance in this field was the organization of the National Committee for Mental Hygiene in 1909.

The present day need for a clear cut program for civilian mental health was pointed out recently by W. B. Miller, Assistant Federal Security Administrator.¹⁷

At the present time there are some 750,000 patients with mental and nervous diseases in American institutions, whose care costs the United States about \$250,000,000.00 annually. Furthermore, mental disease is on the increase. There are in the United States today some 3,000 trained psychiatrists, 6,000 psychiatric nurses, and 1,500 trained workers in the social aspects of psychiatry and occupational therapy. There is a definite need for more personnel in this field of preventive medicine.

Mental hygiene is concerned with the abilities of people to adapt themselves to life; to live happier, more productive lives. It is a public health problem because the mortality rates of the mentally diseased are at least five times as high as the rate for the general population.¹⁸

Vogel¹⁸ proposes the following steps in organizing a mental hygiene program: (1) The establishment of a division or department of mental hygiene or mental health, headed by a full time psychiatrist of special qualifications in each state; (2) organization of a mental hygiene or psychiatric clinic in every community, county, or city having a health department.

PUBLIC HEALTH NUTRITION

As early as the eighteenth century, a very important discovery in the field of nutrition was made. Captain Cook, of the English Navy, cured scurvy among his sailors by giving the juice of citrus fruits.

During the past thirty years, knowledge regarding dietary essentials and the foods containing them has made tremendous strides. Today a clear understanding of the

etiology and cure of the deficiency diseases is common knowledge to all practitioners of medicine.

Parran,¹⁹ in a recent discussion of the public health aspects of nutrition, stresses these points: (1) Evidence of unsatisfactory nutrition as a public health problem; (2) evidence of inadequate dietaries as the most common cause of mass malnutrition; (3) method of attacking the problem.

It has been estimated by reliable sources that just about one-third of the total population of the United States is receiving diets containing all the essentials. Statistics show that a large proportion of low income and relief families subsist on inadequate diets.

Dietary deficiency diseases such as scurvy, rickets, and pellagra are mentioned as public health problems. Parran contends that dietary deficiencies can be eliminated by mass education in nutrition.

Shepard,²⁰ in a discussion of public health needs in national defense, points out the high incidence of malnutrition in this country where food is plentiful. He recommends public health education in nutrition as a solution to the problem.

The subject of nutrition in national defense was discussed at the Nineteenth Annual Conference of the Milbank Memorial Fund recently.²¹ It was pointed out here that adequate supplies of the right kind of food are an important part of the "total defense" work. A new flour and bread enriched in vitamins and minerals, were recommended as a national measure for promoting better nutrition. Other recommendations were: (1) The correction of malnutrition among industrial workers, and (2) adoption of a plan of popular education in diet.

PUBLIC HEALTH DENTISTRY

Public health dentistry has been expanded considerably through funds provided by Title VI of the Social Security Act.²² The first statewide program of dental hygiene was put into effect by the State of North Carolina in 1918. Between 1935 and 1940, twenty-three states added

dental health programs. There is a diversity in the type of dental health programs in effect today.²³ Some are purely educational and have to do with diet, and use of the tooth brush; others include dental inspections with recommendations to the parents, and still others provide for correction of dental defects. The main elements of the program should be dental inspection and subsequent correction of dental defects.

PUBLIC HEALTH EDUCATION

The value of public health education was appreciated as far back as 1873, when Elisha Harris made the following statement at the first meeting of the American Public Health Association:² "In the United States, the permanent value of any method or system of sanitary government will depend upon the degree in which the people are generally enlightened, concerned, and made responsible, in regard to sanitary duties." All personnel of the health department are health educators in the broad sense of the word, because all programs of necessity involve this activity. Smillie² states: "No public health program can be completely successful in the United States unless it has the confidence and support of the people that benefit by it. Full support cannot be secured unless the people understand the purposes and objectives of the program."

Present day activities in this field include the following:² (1) Training of school children in matters of personal and community hygiene; (2) dissemination of health information to the general public by means of pamphlets, posters, lectures, moving pictures, radio programs, and newspaper articles.

In a discussion of the philosophy of public health education, Bauer²⁴ mentions the following qualities which a good health educator should possess: (1) Honesty in reports and generalizations on health conditions and needs; (2) spirit of earnestness and having the courage of one's convictions; (3) devotion to accuracy; (4) logic; (5) spirit of tenacity of purpose; (6) sense of humor; (7) efficiency; (8)

diplomacy; (9) emphasis on fundamentals; (10) background of culture; (11) technic employed; (12) ingenuity; (13) objectivity; (14) novelty.

VOLUNTARY HEALTH AGENCIES

The voluntary health agencies have played a very important role in public health history and should be considered as the vanguard of the modern public health movement.

The first voluntary health agency to be established in the United States was the Association for the Prevention of Tuberculosis (1904).² District nursing associations had their origin in New York City in 1877 in the form of a charity society for the nursing care of the sick poor. The Red Cross is a national organization whose function is primarily disaster relief (1900). The American Social Hygiene Association was established in 1905; the American Child Health Association in 1909; the National Committee for Mental Hygiene in 1909; the American Society for the Control of Cancer in 1913. The American Public Health Association was organized in 1872.

THE PUBLIC HEALTH PROGRAM UNDER TITLE VI OF THE SOCIAL SECURITY ACT

The expansion of the public health programs of state and county health departments was made possible by the provisions of Title VI of the Social Security Act (1935).

Title VI of the Social Security Act provides for the following appropriations:²⁵

1. An annual appropriation of not to exceed \$8,000,000.00 for the purpose of assisting States, counties, and health districts and other political subdivisions of the states in the establishment and maintenance of adequate health services, including the training of personnel for state and local health work.

2. An annual appropriation of not to exceed \$2,000,000.00 to the Public Health Service for research activities of the Service and for the expense of cooperation with the States in the administration of the Federal funds granted for aid in the establish-

ment and maintenance of state and local health services.

Coffey²² has recently discussed the subject of the expansion of public health facilities under Title VI. He states that it was designed to stimulate the expansion of programs already under way and to fill some of the gaps in public health activities with new programs. He presents some of the more important advances in public health programs since the enactment of the Social Security Act in 1935. The first one is pneumonia control. In 1935 no state was administering an organized statewide program of pneumonia control, whereas today thirty-four states have such programs in operation.

The cancer problem is another one of major importance. In 1935 only three states had cancer control programs. With the aid of Title VI funds the number has increased to sixteen. Cancer control activities include the following: Prevention through education, state aid in treating the indigent, free tissue diagnosis for physicians, the postgraduate education of physicians, and compilation of vital statistics.²²

Another program which benefited by Title VI funds is public health dentistry. There has been a substantial increase in the number of statewide dental health programs for the indigent and semi-indigent since 1935.

In 1935 only three states were conducting industrial hygiene programs, whereas today thirty-one states have such programs in operation.

Coffey²² further states that the improvement of the quality of public health personnel was made possible by Title VI funds. Since 1936 the state and territorial health departments have authorized the training of 5,419 trainees, 80 per cent of whom had their expenses defrayed in whole or in part, out of Title VI funds.

SUMMARY

A brief history of the modern public health movement has been presented. The following points were discussed: Origins of public health, the three eras of the mod-

ern public health movement, the various new programs included in the movement, the history of county health organizations, voluntary health agencies, and the Public Health program under Title VI of the Social Security Act.

The pioneers of the modern public health movement are worthy of a tribute from the present day public health personnel. Their achievements are responsible for public health as it is practiced today, and will forever shine as a beacon light for the guidance of the public health profession. May their monumental contributions to public health knowledge and practice forever serve as an impetus for further research and progress.

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POOL PLASMA BANK AS USED BY THE L. S. U. DEPARTMENT OF OBSTETRICS AND GYNECOLOGY*

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AND

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NEW ORLEANS

Serum and plasma have been used as far back as 1871 by Bowdich and one year later by Luciani. Amberson's bibliography contains an excellent review on earlier experimental work on plasma and serum. The first extensive clinical use of plasma and serum was in 1927 at the Bryn Mawr Hospital, Philadelphia, Pennsylvania.

Present day widespread usage of plasma depends upon a proper method of collecting, preparing and storing. Anyone intending to establish his first plasma bank might feel confused or uncertain as to the best procedure, because of the variety of information and diverse methods in use. However, we have, without previous experience, organized a practical, inexpensive plasma bank. Even though our apparatus may not appear impressive in detail, nevertheless it has proved effective in actual results. In practicability, it has compared favorably to the more elaborate types. Under the present emergency, constant improvements in equipment and procedure should eventually bring about a general

agreement in collecting and storing plasma. Until such standardization occurs, our method shows that it is unnecessary to invest in expensive equipment that soon may grow obsolete.

In the obstetric and gynecologic service of the New Orleans Charity Hospital, blood is collected by a closed system method. The venipuncture set consists of a length of good quality tubing with an observation tube and needle. The blood storage bottle contains 70 c. c. of 5 per cent sodium citrate, which is preferable to the 2½ per cent, as there is much less protein precipitate in stored plasma. At the present time we are using Upjohn bottles and sets which have proved suitable, but any other similar kind will suffice. After blood is drawn, it is placed into the reserve blood bank and allowed to remain about five days. If not then used, the plasma is collected, stored, and removed before the seventh day. Hemolysis increases following this period, and free hemoglobin and potassium may saturate the plasma which in turn may often cause reaction in patients. This bank has been in operation for five months, through March, 1942, and at the present time we have about 25,000 c. c. in reserve and ready for instant use.

The plasma collecting apparatus consists of the following: one clean table with sterile drapes, all articles used autoclaved; a 1000 c. c. flask containing 10 c. c. of 1 per cent merthiolate as a preservative; a collecting-bottle stopper containing two openings—a short glass tubing being inserted in one, a suitable filter being placed on the inlet side. Two lengths of rubber tubing are used, one connecting to a suction which may be electric, water or bulb, the other tubing joining the filter to a collecting needle. The needle is then placed into the supernatant plasma about one-half of a centimeter above the cell layer, and a small alcohol-saturated sponge is placed into the neck of the bottle to prevent airborne contamination while the plasma is being withdrawn.

Each bottle contains 1000 c. c. of plasma, is sealed and allowed to remain at room temperature for four days. After a cul-

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ture is made in brain broth and on an agar slant the plasma is then returned to cold storage. The inoculated media is kept in an incubator for seven days with a daily checking and if no bacterial growth or fungus is obtained, the plasma is considered sterile.

Since November, 1941, through March, 1942, we have collected approximately 90,000 c. c. of plasma by this simple but effective method and have had only one contamination. In this same period, over 50,000 c. c. have been given without a reaction other than a chilly sensation that was experienced in three patients. This may be explained by the fact that the plasma is never warmed before using.

A 1000 c. c. bottle contains plasma taken from four or five donors and is stored for three weeks to a month. When the maximum precipitation has occurred, it is then broken down into 500 c. c. and mixed into eight or ten donor-units, using our collecting apparatus for the process. This is accomplished by combining plasma from two bottles, withdrawing 250 c. c. from each bottle. Each 500 c. c. is again cultured after 48 hours and if the unit is not contaminated it is stored in an ice box until used.

Plasma collected is practically free of hemoglobin and potassium, but contains considerable flocculation. The maximum flocculation and precipitation occurs in the first month; thereafter it is fractional—hence the breakdown into mixed donor lots after the first month. Clarification can be obtained by using a Seitz filter which will remove all precipitated proteins for a short period of time. If such a filter is not available, a suitable substitute can be obtained by the use of small glass beads and a fine wire-screen mesh. Plasma can be kept at room temperature if proved sterile, but the danger of bacterial growth and contamination is less apt to occur if kept in cold storage.

In the application, we have used plasma to maintain blood pressure in patients who have pre- and postpartal hemorrhages, and in all patients on the gynecologic service

who go into shock from hemorrhages of various causes. Toxemia cases, whose serum proteins are lower than four, are given massive transfusions of plasma. Those patients who need blood while being anesthetized for surgical procedures are given plasma rather than blood, because whole blood might cause a reaction that cannot be observed during this period. This danger is greatly lessened by the use of plasma.

SUMMARY AND CONCLUSION

On the whole, the advantages offered by our simple apparatus more than offset the differences when compared to the highly technical and expensive sets. Not only practical and economical, but it does not require a special laboratory or expert technician to operate it. The fact that it can be used repeatedly without expensive replacements makes it especially feasible where funds are limited. Considering how efficient it has proved by merely observing ordinary aseptic precautions, we feel until there is a general standardization such similar apparatus can be used for collecting plasma.

DISCUSSION

Dr. Harry A. Davis (New Orleans): Drs. Lehman and Suter are to be congratulated on their timely presentation. As you all know, in view of the present situation all over the world, there has arisen a great need for the use and preparation of blood plasma and serum. There has been in the past a considerable amount of discussion as to which is the more efficacious, plasma or serum. Much of this discussion is based on reports which emanate particularly from France and from Russia. I think most of the recent work seems to suggest that there is essentially no difference in the clinical results obtained by the use of serum and plasma. Nevertheless, we notice that the Army and Navy are using plasma entirely.

It is not my purpose to discuss the advantages of plasma in the liquid state. There are advantages from the point of view of economy. On the other hand, the refrigeration which is required may prove rather expensive, particularly when one desires to prepare this material in large quantities.

The question of reactions must be considered. There has appeared very little in the literature regarding the incidence of reactions following the use of plasma and serum, and it is only recently, within the last year or so, that one finds some reports creeping out. In looking over the literature

on the use of this material, one finds that in the Russian journals reports have appeared giving an incidence of 3.5 to 25 per cent.

I did not gather from Dr. Lehman's remarks whether this plasma is typed before they use it. There has been, since the work of Levinson and Cronheim, a tendency to avoid all typing and just rely upon the mixture of serums to obtain a low titer of agglutinins. However, it will be found that if one pools serum or plasma that occasionally one will get serum or plasma with a high agglutinin titer which will produce serious effects. An illustration of this is the recent report of Polayes and Squillace of a near-fatal reaction following the use of dried pooled plasma. I think we are going to arrive more and more at the idea of using typed sera. I think we are going to type the plasma and sera, or are going to determine the agglutinin titer of pooled lots of sera. We do not do this at present.

Finally, the question of flocculation in plasma is one which has bothered persons working with this material. It can be avoided by mixing mixed plasma with an equal volume of normal salt solution. In this way fibrin clot formation is reduced to a minimum. However, it is essential to filter all materials before using, because fatal reactions may result if fibrin clots are present.

Dr. John H. Connell (New Orleans): I wish to express my appreciation at being able to see what work is going on in the plasma field at the Charity Hospital in this city. For the past two and one-half years I have maintained a plasma bank in Pineville and we have given more than 300 transfusions. We have a slightly more elaborate system than demonstrated herein. There is however on the market today equipment which is simplicity in itself and which can be utilized in the smallest of hospitals and clinics. This is a completely closed system of vacuum bottles which several firms have placed on the market. The unit price of final containers holding one pint is only approximately \$1.45.

As to the clinical use of plasma I cannot say enough. There are few things in the armamentarium of a physician which can definitely save lives and this is one which will do just this in many instances. We have had to give as much as 3500 c.c. of mixed plasma to a single patient in order to accomplish such a result and we have never had adverse reactions.

As to the question of typing serum I must disagree with Dr. Davis on the subject. At Charity Hospital here in New Orleans, we conducted an extensive investigation on the cross matching as also has been done at the Mayo Clinic and have found that cross matching of blood for transfusions is not necessary. The serum of a so-called incapable donor is too much diluted within the recipient to cause adverse reactions.

I have personally seen over 75,000 transfusions without cross matching the blood with no serious reactions. In addition, in the use of plasma, we pool plasma from ten different donors thus neutralizing agglutinins. Reactions from plasma in my experience have been less frequent than reactions from normal saline, glucose, and so forth. Slight reactions which do occur with intravenous medication are usually due to the apparatus which has been improperly cleaned.

Dr. Joseph Cohen (New Orleans): There is much unofficial discussion, by the man on the street so to speak, regarding the donation of blood for war purposes. A question was asked me by one of my patients regarding the effect of mixing negro blood with white blood, and whether it is being done. Therefore, do I desire to raise this question here, and inasmuch as there are doctors present who seem to know quite a bit about plasma and blood transfusion, I would like to pass on to them this question.

We just heard from one of the speakers that at Charity Hospital they gave as many as 70,000 to 100,000 transfusions and that they collect sometimes as high as 9,000 c.c. of blood plasma in a short space of time. I wonder, then, if by chance, some of the plasma some of the white patients received was from colored donors, and if some that the colored patients received was from white donors. And I wonder if there was any reaction noticed.

That is a question that will come up pretty seriously in the near future. We have quite a number of negro soldiers in the Army now and with so many negro soldiers and white soldiers working side by side, an emergency transfusion may become necessary. Doctors may be faced with the necessity of using negro blood on white soldiers and white blood on negro soldiers. What will be the reaction? Some of us have ideas on the question. Others may want enlightenment on this question. Now is a good time to discuss it.

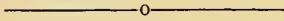
Dr. Joseph A. Danna (New Orleans): In partial answer to Dr. Cohen I might say this: The Red Cross is the agency through which plasma is now being prepared for the Army, through which the donors have been secured; and the Red Cross has not taken any negroes anywhere in the country. Now, I do not know where these transfusions he speaks of have been done. Red Cross headquarters has given instructions throughout the country not to accept negroes for this particular purpose. There has been a lot of trouble caused the Red Cross over that fact, because the negroes feel their blood is as good as somebody else's and they feel they should be able to give the blood. There is nobody who feels more like a Southerner than I do, but we are tending toward finding some day that cows' plasma and pig plasma is going to be just as good as human plasma. Now, if we can use cows' plasma and pig plasma or even dog

plasma, it seems to me that negro plasma would not be so bad at that.

Dr. B. J. Lehman (In closing): In reply to Dr. Davis' query, we type all blood before removing the plasma and try to mix as many types as possible. Often it is impossible to get all four types but at least three are always used in breaking down the plasma into eight or ten donor-units per 500 c.c., and up to the present time there have been no undue reactions.

In so far as all our plasma and blood have a negative Wassermann, in severe obstetric emergencies where plasma of one race is not available, we do not hesitate to use colored plasma in white patients or white plasma in colored; so far, there have been no reactions.

It was stated in the paper that our set is simple. There is no expense after the initial cost, and the apparatus will give the same results as any elaborate or expensive one. We did not have any allotted funds and used only the available infusion and transfusion sets that were in the hospital. The incidence of contamination was very low, as mentioned in the paper, and will compare favorably with any other present method of collecting plasma.



THE MANAGEMENT OF RETRODIS- PLACEMENTS OF THE UTERUS WITH SPECIAL REFERENCE TO THE INDICATIONS FOR SUR- GICAL THERAPY*

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Backward displacement of the uterus, probably because it is so simple to demonstrate, was a very popular subject for discussion in the days when gynecology was developing as a specialty but microscopic pathology and other refinements of diagnosis and treatment were still unknown. Articles of 50 and 75 pages were written about it, more than a hundred different operations were devised for its correction, and in 1887, according to Skene¹, more than 300 different types of pessary were in use. In that same year G. R. Bantock² of Lon-

don, speaking before the American Gynecological Society, solved the problem to his own satisfaction and unconsciously put his finger on what is still the chief source of confusion in the treatment of uterine retrodisplacements. He never, he remarked, troubled himself with the cause of such a displacement any more than he would trouble himself with the cause of a broken bone; he merely used a pessary and let it go at that. Ever since that time other gynecologists and surgeons have been treating retrodisplacements by pessaries or by surgery with the same disregard of the fundamental causes of their existence. In that disregard, I have no doubt, can be found the origin of most of the confusion, most of the lack of success which attend so many of our attempts to treat this malposition of the uterus, and most of the embarrassment with which many of us—and I include myself in all that I am saying—look back upon our past endeavors in this field. I never deliberately ignored the causes of a retrodisplacement, as Dr. Bantock so complacently stated that he did, but I know that I have not concerned myself enough with them.

There are other reasons, of course, for the confusion. There is still apparent the old tendency to argue along the general lines: This woman has a retrodisplacement, therefore this woman needs a suspension operation. The argument is wrong for a variety of reasons. It does not in the least follow that because a woman has a backward displacement she must have a surgical correction of it. It does not follow, and this holds for a large number of cases, that she needs any treatment for it at all. Emmet,³ who was then a voice in the wilderness, was making that point in 1887. Equally important, if she should need an operation, it does not follow that a suspension operation will meet the situation. In the majority of instances, if only a suspension operation be done, the patient will receive very limited relief if she receives any at all. Moreover, unless the type of suspension is selected with a good deal of care, it may do

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her considerable harm and occasionally it may even put her in jeopardy of her life.

Finally, although the anatomy of the pelvic diaphragm and pelvic floor is difficult to comprehend, there is no reason at all for the obscurity with which many writers have managed to cloak it. The concept of uterine suspension and support has been completely overlooked in a welter of anatomic details, which, important though they are, are of no importance at all until basic principles are understood.

Everything that I have been saying leads to one conclusion: The correction of retrodisplacement of the uterus, in women in whom any correction is necessary, is usually a simple and usually a satisfactory undertaking when once the causes of the malposition and the anatomic background against which the procedure must be carried out are clearly understood. In a presentation of limited length I must necessarily over-simplify the subject, but my purpose is to return to first principles, and first principles are necessarily of a very elementary character.

THE CONCEPT OF UTERINE SUSPENSION AND SUPPORT

The uterus is a mobile organ, whose normal position is one of moderate antelexion. It is fixed in the pelvic cavity only at one point, the uterocervical junction and the lower third of the fundus. The cervix, the position of which is chiefly determined by the position of the fundus, lies at an obtuse angle to it and at right angles to the vagina. The uterus is kept in its normal position of antelexion by intra-abdominal pressure exerted against its posterior fundal surface, but it may change its position, for various reasons, within an arc of 180 degrees. Such changes, however, except during pregnancy, are always transient, and even after pregnancy the uterus returns to its original position unless there has been a fundamental alteration in the elasticity of its supports or in its intrinsic muscular structure, or in both.

The uterus is both suspended and supported in the peritoneal cavity by a mech-

anism which may be conceived of as consisting of three separate levels:

1. The upper or suspensory level consists of the round and broad ligaments. The round ligaments, made up of connective and unstriated muscle tissue, extend from the uterine cornu to the inguinal canal and serve as the ridgepoles of the tent-like structures known as the broad ligaments. These ligaments, which are made up of connective tissue, contain the vascular supply of the uterus. The round and broad ligaments suspend the uterus but do not support it.

2. The middle or supporting level consists of the anterior pubocervical fascia, the posterior uterosacral ligaments, and the lateral cardinal (Mackenrodt) ligaments, which fuse with each other to form an elastic sling or set of springs in which the uterus is maintained in labile equilibrium in the peritoneal cavity. The pubocervical fasciæ arise from the anterior aspect of the uterus and extend to the pubic bone, thus maintaining the normal anterior curve of the vagina. The uterosacral ligaments are strong musculofibrous bands which arise from the posterior surface of the uterus near the internal os and encircle the rectum, to fuse with the fascial covering of the second and third sacral vertebrae. They are composed of connective tissue and nonstriated muscle, and they exert considerable traction on the cervix; by their semi-diaphragmatic action they also divert intra-abdominal pressure from acting directly against the rectovaginal fascia below them. The cardinal or Mackenrodt ligaments extend from the lateral aspects of the uterus to the bony pelvis on each side. They are made up of strong connective and unstriated muscle tissue and are the main musculofascial support of the uterus, acting for all practical purposes as a fulcrum around which it swings.

3. The lower level also has a supportive function. It consists of the perineal body, which maintains the normal posterior curve of the vagina, much as the pubocervical fasciæ maintain the normal anterior curve. If

the vagina were not a curving canal the cervix, by sheer force of gravity, would tend to slide down it, as if down a toboggan, dragging the uterus and its associated structures along with it.

The second and third levels of the mechanism which has just been described have, by the very nature of their anatomic structure, a true supporting function. The upper level, however, is merely suspensory. That can readily be proved. As Baer⁴ suggested, if the nulliparous woman is examined when her abdomen is opened, it will at once be apparent that the round ligaments are considerably longer and the broad ligaments are somewhat longer than the distances between their points of attachment (the uterine cornu and the inguinal ring). It can also be demonstrated that these ligaments do not become absolutely taut even when the uterus is displaced manually into a position of extreme retroversion. If, on the other hand, a cadaver were so dissected that the pelvic floor and the supporting diaphragm of the uterus were removed, both retroversion and prolapse would promptly occur. However normal the round and broad ligaments might be, they could not hold the uterus in its normal position of antelexion if they were not assisted by other structures whose function was supportive and not suspensory like their own.

THE PATHOLOGY OF RETRODISPLACEMENT

On the basis of the anatomic facts just outlined, certain broad propositions can be stated: (1) If the suspensory ligaments of the uterus alone are injured (a situation which seldom comes to pass), the excursion of the fundus is extended, the tendency to antelexion is decreased, retroversion may occur, but symptoms are not likely to develop. (2) If the pelvic diaphragm is injured, retroversion will occur, regardless of the state of the suspensory ligaments, and may or may not be accompanied by symptoms. (3) If the pelvic floor (perineal body) is injured, prolapse will be associated with retroversion, even if the diaphragm is not greatly damaged, and symptoms will probably develop. (4) If the perineal body is undamaged, even if the fascial supports are considerably damaged, the uterus, at

least for a time, cannot settle below a certain level in the pelvis and only a moderate degree of prolapse can occur, which is, however, likely to be symptomatic.

Disregarding for the moment the etiology of these injuries, let us consider the pathologic chain of events. As the supporting ligaments of the uterus, as well as its own musculature, fail to play their part in the maintenance of its normal position, the fundus slowly sags backward and downward. First it points to the promontory of the sacrum, then to the hollow of the sacrum, and finally to the sacrococcygeal articulation. When this stage of retrodisplacement has come to pass, the fundus lies in the cul de sac, below the level of the sacrum, and the cervix, which has necessarily changed its position with the change in the position of the uterus, points toward the bladder. The lengthened uterosacral ligaments not only permit the fundus to sag backward but also permit the whole organ to sink to a lower level in the pelvis. If associated injuries of the pelvic floor and pubocervical fascia have damaged or obliterated the normal curve of the vagina, the cervix slides downward in its axis, which has now become straightened rather than curved, and the uterine fundus and attached bladder necessarily follow. The tubes and ovaries, whose position is dependent on that of the uterus, are also displaced downward. As the uterus begins to sag permanently backward, the intestines enter the vesico-uterine space and thus separate the uterus from the bladder, against which it normally lies. Intra-abdominal pressure, formerly directed against the posterior aspect of the uterus, is now directed against its anterior aspect, and the very force which once held the fundus in a position of antelexion now forces it farther and farther backward in its new position of retroversion. Furthermore, the impact of the same pressure against the weakened pubocervical fascia still further encourages the tendency to prolapse.

CLINICO-PATHOLOGIC PICTURE

The symptoms of retroversion and associated prolapse of the uterus are easily ex-

plained. Backache, which occurs in 75 per cent of all cases, is partially due to traction of the abnormally heavy uterus on the uterosacral and cardinal ligaments, which are in a state of chronic fatigue, and partially to chronic infection of the cervix, which, by contiguity, extends outward into these ligaments. Actual pain is not usual unless there are marked varicosities of the broad ligament. There is, however, a frequent sense of weight and pressure, increased by standing and exertion, which is partly due to the increased size of the uterus, partly to its prolapse, and partly to the uneven distribution of the uterine weight. This weight is now borne entirely by two sets of attenuated ligaments, the uterosacral and the cardinal, instead of being distributed among five sets, as nature intended it should be.

Dysmenorrhea, although partly an exaggeration of this permanent discomfort, is also due to chronic passive congestion of the uterus, which is frequently associated with hyperplasia of the endometrium and which is always more marked at the beginning of the menstrual period. Endometrial hyperplasia is itself due to multicystic changes in the ovary. Here the chain of events is circulatory disturbances, retarded ovulation, and overproduction of estrogen for priming the endometrium. The pathologic process is expressed clinically as menorrhagia. Leukorrhea results either from injuries of the cervix or from chronic passive engorgement of the uterus or from both.

Constipation may be caused by pressure of the fundus on the rectum and consequent interference with normal peristalsis. Vesical irritation may be caused by marked degrees of displacement and prolapse, with resultant distortion of the vesical neck. If sterility is present, it is usually merely a part of the whole picture of congenital deficiency; it is not caused by retroversion unless the tubes should be kinked by the malposition. Abortion, in my own experience, is seldom caused by backward displacement. The constitutional reaction may include

weakness, malaise, headaches, and gastric and nervous phenomena.

The degree of retroversion is not necessarily an index of the intensity of the symptomatology, and vice versa. There are cases in which exaggerated symptoms can be definitely related to first degree displacements, and cases of third degree displacement and almost complete prolapse in which the patients complain of little more than the discomfort of the extruded mass and urinary symptoms due to distortion of the regional anatomy. The patients who make up the latter group of cases are usually elderly women, past the menopause, in whom atrophic changes are already present. The uterus is therefore not hyperplastic, there is no excessive weight on the ligaments, and disturbances of function, since function has ceased, would scarcely be expected.

THE ETIOLOGIC FACTORS OF UTERINE RETROVERSION

The instances of retroversion caused by trauma in the ordinary sense of the term are so rare as to demand no consideration at all. In a certain proportion of young women, variously estimated at from 10 to 25 per cent, the uterus is in a position of retroversion for congenital reasons. In such cases other congenital defects are usually present also, such as a short anterior vaginal wall, ovarian hypoplasia, and other evidences of infantilism.

The most common cause of both transient and permanent retroversion is relaxation of the uterine supports in parturition. During pregnancy all the pelvic structures are enormously hypertrophied, and the uterine supports, because of the weight of the gravid uterus, become attenuated, the degree of attenuation usually being dependent upon their initial state of development. In most cases, when the supports are in good condition and labor proceeds normally, with a minimum of operative interference and that properly instituted, pregnancy does not cause permanent damage. The original tone and form are never quite regained, but the structures return approximately to their original state and if retro-

version does occur, it is only transient and is readily corrected.

Permanent retroversions chiefly though not entirely occur in the group of cases in which labor has been improperly conducted. Sometimes it has been allowed to drag out too long, sometimes it has been terminated too swiftly by the application of forceps or by breech extraction or by the use of oxytocics before full dilatation of the cervix. After labor the damage may be aggravated by too early a return to the upright position, too early exercise or hard work, failure to use a proper abdominal support, and similar mechanical causes. Repeated pregnancies at short intervals are likely to increase the initial pathologic change, although a single pregnancy in women with congenital defects of the pelvic tissues may work as much harm as repeated pregnancies in a better developed woman. A large proportion of the cases in which the trauma of labor results in aggravated retroversions, whether or not parturition is properly conducted, is derived from the group of women whose fascial supports are congenitally under-developed.

THE PRINCIPLES OF THE CORRECTION OF RETRODISPLACEMENTS

There is not very much to do about the fundamental cause of all retrodisplacements of the uterus, that the abdominal viscera were originally designed for individuals who walked upon all fours and that the necessary adaptations for the change to the upright position have not always been made in the individual case. There is usually no need to do anything at all about congenital retrodisplacements, since in the great majority of cases they give rise to no symptoms at all. In fact, in this kind as in all kinds of retrodisplacements it is a very good rule for the gynecologist to follow that he should refrain from treating any malposition which has no symptoms directly referable to it. In the occasional case, however, a congenital displacement does give rise to symptoms, and if the cause and effect relationship can be demonstrated, that is, if relief follows the wearing of a pessary for six or eight weeks, there is both justifi-

cation and indication for surgical correction. On the other hand, the wearing of a pessary cannot bring about permanent cure. The structures are fundamentally deficient and there will be a reversion to the original conditions as soon as the mechanical support is removed.

Displacements which follow parturition are divided into two groups, the transient type in which the retroversion is due to subinvolution of the uterus, and the permanent type in which it is due to actual damage of the fascial supports and perineal body. It might be well to point out here that neither type can be demonstrated immediately after delivery. For the first 10 to 14 days thereafter the uterus is too large to be contained in the true pelvis, and examination before the woman begins to move about may not reveal a malposition even when descent into the pelvis has occurred. It is never possible to state positively that a retrodisplacement is not present until an examination has been conducted six or eight weeks after delivery.

There is no doubt that the incidence of all postpartal retroversions can be reduced by prophylactic measures, such as the proper conduct of labor and abstinence from interference until full dilatation has occurred and it is clear that interference is indicated. The incidence of subinvolution, which is an actual cause of transient retroversion and an auxiliary cause of permanent retroversion, can be reduced by such measures as a sufficiently long stay in bed, the use of a properly fitted corset, the elimination of an abdominal binder unless there is a special indication for its use, attention to bowel and bladder function immediately after delivery, frequent changes of position in bed, the use of hot douches and oxytocics, and sometimes the use of the knee-chest position. I have never personally seen a great deal accomplished by special exercises, such as the monkey trot and the kangaroo walk, and Van Auken⁵, whose personal results were only 6 per cent better in treated than in control cases, comments on how widely the reported results of these exercises differ.

If in spite of these precautions full involution does not occur, hot douches, oxytocics and similar measures should be continued while at the same time the weight of the abnormally heavy uterus is taken off the ligaments and they are given a chance to revert to their normal elasticity. The wearing of a Smith or Hodge pessary for six or eight weeks accomplishes this result, and thereby corrects the retroversion, in most of these cases.

A different type of problem is presented by the woman whose displacement is due to actual injury of the pelvic structures. A pessary will not help her permanently, for, just as in the congenital type of malposition, when once it is removed the uterus will sag backward and downward. It sometimes will not help even temporarily, for a relaxed introitus may lack sufficient musculature to hold it in the proper position, and it will either slip out entirely or exert its force directly at the point at which the uterus tends to hinge, so that the malposition is really aggravated. An operation is the only treatment of value in such cases, though it should not be resorted to until a therapeutic test with a pessary has been carried out, unless, of course, the cause and effect relationship is unmistakable.

SURGICAL PROCEDURES

What should be done for the patient with an acquired symptomatic retroversion for which surgery is indicated depends upon several considerations, chiefly the extent of the displacement, the associated injuries, the severity of the symptoms, and the patient's age and parity. In a young woman, who has only one or two children and whose pelvic structures are fundamentally sound, every effort should be made to preserve the pelvic organs. In an older woman, who has already borne her quota of children and whose functional days are over, a useless organ may be removed without compunction if it is diseased or otherwise abnormal, or merely if its removal would simplify the remainder of the operative procedure. In both young and old, however, the operation should include, according to the extent of the injuries present:

1. Restoration of the pelvic floor by perineorrhaphy.
2. Plication of the pubocervical fascia and correction of the cystocele by anterior colporrhaphy.
3. Shortening of the cardinal ligaments by plication on the anterior aspect of the uterus, the operation being performed through the vagina (Manchester method) or intra-abdominally, as may be most convenient.
4. Shortening of the uterosacral ligaments by plication, and partial closure of these ligaments, so as to divert the full force of intra-abdominal pressure from the rectovaginal fascia on the next lower level.
5. Shortening of the round ligaments by some sort of suspension operation.

The results of these procedures can also be reduced to outline form:

1. By restoration of the pelvic floor and repair of the pubocervical fascia the normal curve of the vaginal canal is restored and the tendency of the uterus to prolapse along with the cervix is controlled.
2. By shortening the cardinal ligaments the uterus is elevated to and maintained in its original level in the pelvis.
3. By shortening the uterosacral ligaments the cervix is pulled to a higher level in the vagina and is forced to point to the sacral hollow.
4. By shortening the round ligaments the uterus is pulled into a position of anteflexion and the extent of its backward excursion is decreased, these results being the least important of all that are achieved by surgery.

As to what suspension operation should be used, which is the subject around which most of the discussion has raged, it is well to recall the principles laid down by Gilliam and to base one's choice upon them. An effective suspension operation, he declared, should utilize the natural supports of the uterus, should insure a certain amount of mobility, should adapt itself to the functions of pregnancy and parturition, should be permanent in its results, and should be easy of execution. In other words, the ulti-

mate test of an operation of this sort is the permanence of the correction under the stress of life and function, the absence of deleterious effects upon pregnancy and labor, and the maintenance of anatomic conditions in as nearly a normal state as possible.

In the light of these principles certain operations need no consideration at all. Aside from their other obvious defects, operations which involve fixation of the uterus are entirely unphysiologic. The uterus is not a fixed organ. Operations done extraperitoneally through the inguinal ring have lost much of their original popularity. Lusk⁶, in 1887, stated that he considered the Alexander operation anatomic nonsense, and Emmet⁷, in 1895, said that its principle was wrong and that if it ever gave relief it was by accident. I am not so sure that it deserves quite such harsh strictures. I formerly used the Alexander operation, and I would not go so far as to say that I shall never use it again, but I shall certainly not use it very frequently, for I have seen a good many failures follow its use and some very dangerous situations arise after it, as can arise in any blind procedure.

An operation such as the Baldy-Webster suspension, in which the round ligaments are drawn through artificial openings in the broad ligaments and are attached to each other on the posterior aspect of the uterus, at first glance sounds as attractive as it is ingenious, for the uterus is suspended in the ligaments as if in a sling. Actually, however, it is wrong in principle, for it involves a grave distortion of the pelvic anatomy. The normal relationship of the round to the broad ligaments is completely altered. The procedure, furthermore, is useless if the uterus is heavy or prolapsed, and the very nature of the pathologic process makes it likely to be both. Difficulties are frequent in subsequent pregnancies. Finally, intestinal obstruction has several times been reported after this operation, and probably has gone unreported many times more. The possibilities of this complication seem to have been suspected by Webster himself, for, as Owen

and Kelly⁸ have recently pointed out, he twice warned of the importance of closing the apertures in the broad ligaments through which herniation of the bowel might, and does, occur. Although sterility is not a usual symptom of retroversion I have seen at least one case in which it was clearly caused by the correction of the malposition by the Baldy-Webster technic. Preoperative salpingography demonstrated the kinking of the tubes, and passage of ureteral catheters after the operation was taken down later proved their patency.

I personally prefer the Simpson modification of the Gilliam suspension operation, which amounts to a subperitoneal transplantation of the round ligaments. This operation maintains the normal pull of the round ligaments, utilizing them in their intended capacity as a suspensory apparatus to limit the backward excursion of the uterus, and the results are almost uniformly good if certain precautions are observed. The suspension must not be performed too low, so that the uterus would be forced toward the abdominal wall, or too high, so that the ligaments would become attenuated from being used in a supportive rather than in a suspensory capacity. The curved forceps used to pick up the round ligaments must at all times be kept within the peritoneal fold of the broad ligaments, so that no hiatus is left through which the bowel might herniate and become obstructed. It is true that immediately after the operation is performed the round ligaments are on tension, but they soon stretch, and pregnancy, as I have repeatedly proved in my own experience, occurs without the slightest difficulty from beginning to end.

SUMMARY AND CONCLUSIONS

1. Backward displacements of the uterus form a confusing subject and their correction is often unsuccessful because the fundamental concept of how the uterus is supported in the pelvis is overlooked.

2. The uterus, which is not a fixed organ, is suspended in the pelvis by the round and broad ligaments, but supported by the pelvic diaphragm (the uterosacral, pubocer-

vical and cardinal ligaments) and the pelvic floor (perineal body).

3. Symptoms do not occur if only the suspensory ligaments are injured, a situation which only occasionally is observed, nor do they usually occur if retroversion alone is present. When, however, the pelvic diaphragm and/or pelvic floor is injured, prolapse is associated with the retroversion, and various symptoms, all of which can be explained by the pathologic process present, are likely to develop.

4. A small group of retroversions is due to congenital defects of development. The larger proportion follow parturition and consist of transient retroversions due to subinvolution and permanent retroversions due to structural damage to the pelvic tissues.

5. Asymptomatic retroversions need no treatment of any kind. Congenital retroversions giving rise to symptoms warrant surgical correction after the cause and effect relationship has been tested by relief following the wearing of a pessary.

6. The incidence of all postpartal retroversions can be decreased by the proper conduct of labor and by the employment of prophylactic measures. Transient retroversions due to subinvolution can be corrected permanently in most cases by the wearing of a pessary until complete involution has occurred. Permanent retroversions due to structural damage and giving rise to symptoms must be corrected by surgical measures.

7. Although several considerations enter into the choice of the procedure for the individual case, the general principle should be that the suspension operation is usually the least important part of the operation and that the retroversion cannot be corrected unless the pelvic diaphragm and pelvic floor are restored at the same time.

8. The suspension operation chosen should maintain normal anatomic relations in the pelvis, permit normal function, and withstand the stress and strain of future life. The Simpson modification of the Gilliam suspension best answers these requirements.

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ARTIFICIAL PNEUMOTHORAX IN GENERAL PRACTICE

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LAFAYETTE

Increasing interest in more active treatment of pulmonary tuberculosis has aroused its share of enthusiasm in general practitioners. Because pneumothorax is rapidly becoming a weapon of the general practitioner's armamentarium we, not as specialists, but as general practitioners, present this paper to outline anticipated problems and their management.

It has been only in the past decade that the practice of pneumothorax has become widespread enough to reach the outlying districts of Louisiana and be made available to the rural patient. This report embraces ten years' experience in pneumothorax therapy in various sections of Louisiana and includes experiences drawn from management of over 100 patients who were given a total of approximately 3500 instillations of air. This statement, however, concludes our statistical analysis, as we consider it superfluous since any such informa-

tion can be easily obtained from the literature on pneumothorax.

The patients in our series came from all walks of life and, as is true of tuberculosis in general, a majority were found in lower economic strata.

Thanks are due the local health boards for reference of numerous of these cases; for excellent cooperation in their management during the course of their collapse therapy, and for educating them to the advantages of therapeutic collapse. The well organized Iberia Parish Tuberculosis Association, through its financial support, made possible in part the treatment given these patients. The Women's Auxiliary of the St. Landry Parish Medical Society is also to be commended for its energetic aid.

SELECTION OF CASES

In handling the problem our selection of cases was made on the following basis: (1) Clinical evidence of active disease; (2) sedimentation indices; (3) verification of the diagnosis of tuberculosis by at least two positive sputa; (4) radiologic demonstration of the lesion.

The usual "acid-fast" staining technic of Ziehl-Neelsen was used in all cases. Blood sedimentation tests were done according to the technic laid down by Cutler, using a plotted 60 minute curve. Too much stress cannot be placed upon this one test by pneumothoracists. Once a lung has begun to contract away from the chest wall, observation of the state of the lesion by physical examination and x-ray is indefinite. For this reason we feel that the sedimentation index is the most important guide to the therapeutic response.

Roentgenography for the most part had to be a home procedure resulting in the use of lines of unequal strength and calling for modifications to meet the existing conditions. In all cases postero-anterior views were taken. Notwithstanding the trying circumstances offered in certain instances, diagnostically legible radiographs were obtained in all cases.

In the earlier part of our experience, selection of patients for collapse therapy de-

pended on the limitation of the lesion to one hemithorax. We did not limit ourselves to either "minimal", "moderate", or "far-advanced" cases. Whether the lesion was deemed pathologically exudative or proliferative was not of great import in influencing the decision to institute collapse therapy. Summarily, unilateral active tuberculosis was our guide to begin artificial pneumothorax.

Following the trend of the aggressive phthisiologic teaching of the past few years, our views towards selection of our cases have become bolder. At the present time we believe minimal or even in some cases, moderate contralateral disease should not deprive the patient a trial of collapse therapy. We have had no occasion to repent this aggressiveness. In some of the cases collapse has been discontinued but in no case has it been because of undue progression of the contralateral lesion. In accordance with the observations of others, our general experience has been that the contralateral lesion has been bettered during the collapse. We are in no position to offer any more of an explanation for this therapeutic paradox than has been advanced by others, but in agreement with the consensus of opinion it does seem likely that a diminution in the toxicity, afforded by control of the more active side, offers the body forces a greater chance of efficiently combatting the remaining lesion.

PROCEDURES FOLLOWED

In evaluating therapeutic response, certain fundamental criteria are considered. First, and of prime importance is the conversion of the sputum from positive to negative, whether or not a cavity is present. If a cavity were present its closure and continued obliteration on reexpansion of the lung was considered a success. Another valuable criterion of the efficacy of treatment is furnished by reviewing serial sedimentation indices taken after the institution of treatment.

Regarding the advisability of a preliminary period of bed rest before beginning collapse, we find ourselves a little more ag-

gressive than average. Our preliminary period of bed rest before collapse is short. Its purpose is more to allow psychic adjustment of the patient to his new found disease and to his medical attendant than to use this period to wait for betterment of the lesion. Too often, we feel sure, this watchful waiting precludes a successful collapse by allowing time for the development of adhesions.

Upon discovery of a new candidate for collapse he is put to bed for two to four weeks, his diet is outlined, and in general he is stabilized mentally by explanations of the purpose of the anticipated pneumothorax. He is told of its chances for successful results on the basis of the average case of his type, the probable duration of treatment, and the likelihood of an earlier social rehabilitation through this method of therapy.

In persons reticent to accept collapses we have even had the prospective patient visited by an ambulatory and economically self-sustaining patient with a maintained collapse. Often this proves a more effective argument than all else we could claim in favor of pneumothorax.

Before beginning collapse therapy we advise our patients to buy a tightly bound composition book in which they learn to keep their own medical record. One section is set aside for recording weight, another contains descriptions of periodic x-ray and fluoroscopic findings as dictated to them by us. The large body of the book is of course given over to the detail of the collapse. Each collapse is dated, the initial reading, the amount of air given and the final reading recorded. In the beginning most patients were prone to make notations of their subjective sensations after each instillation. These often proved of value in helping to determine: (1) the location of adhesions; (2) the rupture of these adhesions; (3) a sufficiency or insufficiency of the amount of air given; (4) development of subcutaneous extravasations; (5) the time of absorption of the air given.

Thus far we have outlined the cases selected for treatment. The routine for ad-

ministration of air to these patients from the initial instillation constitutes the next phase of this subject. No hard and fast rule can be laid down to fit all cases. A discussion of this problem necessarily divides itself into two groups—time and volume.

As regards time, or the frequency with which instillations are given, here again we can only speak on the basis of averages, for every pleural cavity entered might offer modifications which could not go unheeded. Usually the patient was given initially 100 to 300 c. c. of air and a like amount delivered every second day thereafter until in the course of 10 days' time a total of 1500 c. c. had been given. If during any of these initial episodes it was found that the patient's negative expiratory pressure came down to a +2, the amount of air given each time was decreased, or the period between instillations lengthened to 72 or 96 hours. We have long since observed that optimal pneumothorax results are not obtained by the induction of positive pressures. It is far better to allow normal contractility of the lungs to effect the collapse than to attempt to accomplish this by strong positive pressure. Thereafter instillations are made at increasingly longer periods, until the optimum time for the individual patient is ascertained. After the initial series one or two instillations are usually made at four or five day intervals, an additional two or three at weekly intervals, and then for a period of several months moderate amounts at ten day intervals suffice. There comes a time after this when pleural absorbability of air diminishes and the period between visits can often be stretched to three weeks with the observation that not more than 5 to 10 per cent reexpansion of the lung occurs. In all the foregoing discussion, specific mention is made of the time intervals because we feel that it is to such detail as this that the newcomer is mostly interested. It must be understood though, that this regimen can be upset and demand revision of one's plans by a single reading at the termination of giving air at any one

time, or upon the reading found when the patient returns.

One of us (O. E. D.) uses local analgesia only for the first few visits, thereafter discontinuing its use unless the patient desires it. The matter of analgesia must be settled to the satisfaction of each case.

The second big factor for consideration in the routine for administration of air was an even more variant factor, that concern was regarding the amount of air which a patient should be given each time. It would be easy if initially 100 c. c. of air could be given, at the second instillation 200 c. c., at the third 300 c. c., and so on. Incidentally, scrutiny of past records of some patients discloses that in several cases this plan was unconsciously followed. The big factor that governs the amount of air that a patient can receive at one time is the manometric reading before any air is delivered, after 50, 100, 200, 300, 400 c. c. of air have been instilled. Later on, when the interval between injections has reached 10 days, two weeks, or even three weeks, we come to learn the average requirement of the individual lung and pleural cavity in question. Often the patient himself is a fair judge of the state of collapse of his lung and the amount of air that it needs. One particular patient (who, incidentally, had a bilateral collapse) was forced to come in at weekly intervals instead of his regular three weeks because of the forceful pulmonic gymnastics induced by hayfever suddenly increasing his pleural absorption rate. In connection with the volume of air given, this phase of the subject can be closed with a parting admonition: the first one or two times that air is introduced into a pleural cavity in that patient's chest there is induced a foreign feeling, uncomfortable but rarely painful. It is better these first two times, while the lung is divorcing itself from the chest wall, to give small amounts of air regardless (though we may seem to be contradicting ourselves) of the manometric fluctuation; by so doing we lessen the patient's apprehension and make him forever

thereafter more complacent in his attitude to his collapse.

Before we break away from the thought of instituting collapse let us say that in cases of tuberculous pneumonia we begin the procedure within ten days of the subsidence of the acute process, that is, in patients seen initially as a typical bronchopneumonia, once a radiologic and laboratory diagnosis is made, we wait usually only ten days or two weeks before beginning our regular routine. The results attained in every one of these patients argues against a longer period of rest.

BILATERAL COLLAPSE

The evaluation of the possibility of accomplishing a successful bilateral collapse is a most important question. It is somewhat easier to make a decision when a maintained collapse of some duration is followed by a contralateral spread. The length of time that the patient has had the original collapse and the type of collapse that he has largely governs the verdict. One point must be settled in the physician's mind before he seriously contemplates contralateral pneumothorax—the genesis of a new infection. If he can safely feel that the contralateral process is initiated by still present activity of the collapsed side, he should think first of a more positive control of that lesion. On the other hand, if the original lung is deemed controlled, inactive, or possibly arrested, pending the state of the contralateral lesion, decision may be made to institute a new collapse, risking partial reexpansion of the original side if necessary. In cases where one has been so fortunate as to obtain originally a selective pneumothorax or control the active side with a 40 or 50 per cent collapse, it is with comparative safety that the opposite lung may be attacked. It is of prime importance in any bilateral therapy of this type that close attention be paid to vital capacity. In no case where bilateral collapse was contemplated was the idea entertained unless the patient's vital capacity exceeded 2500 c. c. and vital capacity readings were done at each instillation. In cases in which the

vital capacity fell below 2000 c. c. the amount of air delivered was lessened even if optimal readings had to be sacrificed. In six cases handled by us a total reduction of both lung volumes to less than 50 per cent still gave vital capacity readings well above 2000 c. c.

The pneumothoracist in a rural section is frequently called upon to arrest hemorrhage when all other means fail. Hemoptysis of serious amount is the one condition demanding pneumothorax even in the presence of all other contraindications. It is an emergency procedure in some cases, and once the side from which the bleeding ensues is determined, continued voluminous hemorrhage demands immediate collapse of the side. The pathologic state of the opposite side can be disregarded. In these cases it will often be necessary to give large amounts of air. In one patient it was necessary to inject 1200 c. c. before arrest of hemorrhage was affected. The air should be injected 100 c. c. at a time and one to three minutes elapse between each 100 c. c.

PROBLEMS ENCOUNTERED

A problem that will sooner or later confront every pneumothoracist is the choice of anesthetic for his patient in the event a surgical emergency arises. There is no doubt that in competent hands selected inhalation anesthetics can be given safely. If possible, however, it would be better to use some other method. For intra-abdominal work spinal anesthesia has few drawbacks and can be suited to the bulk of surgery urgent enough to submit one's tubercular. In one of our cases with a bilateral collapse, an acute appendix made surgery urgent. The patient refused spinal. Gas anesthesia was considered imprudent. It was agreed that the procedure be attempted under local infiltration of the abdominal wall. The patient's extreme apprehensiveness on the table made it necessary that some additional measure be taken. Pentothal sodium was given intravenously and not only was the appendectomy performed but a uterine suspension done in addition.

Another problem that will sooner or later be encountered is that of pleural effusion. No one group of patients, if properly managed, can present more gratifying results than these. If the diagnosis of tuberculosis is certain, the indications are definite. Should the diagnosis be doubtful one cannot go amiss by treating on the supposition that it is specific. Every pleural effusion necessitating withdrawal of fluid should have a replacement with one-fourth to one-half the amount of air as fluid withdrawn. Especially is it inexcusable to evacuate serous transudates without air replacements. Air replacement is imperative for two reasons: (1) To prevent too abrupt a reversal of the mediastinum to its original position; (2) to insure a future satisfactory collapse. Should emptying be effected without padding the pleural surfaces apart with a column of air it is almost a certainty that fusion of the inflamed surfaces will ensue and troublesome adhesions result.

One case referred to one of us was of tuberculosis of long standing with a progressive downward course. The patient suddenly experienced an acute syndrome which almost proved fatal. He survived, however, and began to improve markedly. He developed gradually a thoracic scoliosis and increasing dyspnea. X-ray revealed a solid left effused hemithorax with apex impulse 2 cm. from right lateral chest wall. At four sittings 7460 c. c. of fluid were removed and 1600 c. c. of air injected into the side. The mediastinal reshift was gradual, the scoliosis improved and the patient continued better, being maintained with a 60 per cent collapse. A case of hemorrhagic pleural effusion was aspirated and the lung kept 25 per cent collapsed and allowed to reexpand gradually until phthisis was definitely ruled out. The diagnosis in this particular case remains to date "idiopathic hemorrhagic pleural effusion."

One point which has not been emphasized thus far is that the handling of these cases was mostly a home and office procedure. We realize how drastic a step it is to institute collapse in an office with only a few

minutes rest after the treatment. Still this was done repeatedly on referred out-of-town patients without a casualty that could be blamed to the informal circumstances.

Adhesions have been quite a common finding to the three of us. We find it remarkable that this was seldom a cause for much concern. Adhesions have not been a cause of failure in any case without cavity, and have not been as deleterious as is usually believed in cases with cavity present. The explanation of this is no dark mystery. Intrapleural air is exerting its pressure-equivalent in every diameter. Lung parenchyma not fused to the thoracic cage will therefore retract first, being least resistant of the tissues in contact with this air. If adhesion is present a cone of lung tissue will be held out while retraction of the remaining free parenchyma continues. Eventually the alveoli throughout the free portions of the lung are emptied and the organ is solid and will compress further only to positive pressures. In the meantime that cone of lung held out by the adhesion has been partially compressed merely by its remaining fixed, while the bulk of the lung has drawn away from it. This elongation itself no doubt constitutes a partial collapse. The remaining part is affected by pressure of the air about the cone. For this reason one can see that the only failures are likely to be those with cavities so stiff-walled that air pressures permissible intrapleurally are inefficient, or those with too dense adhesions of long duration.

As we continue discussion of the excerpts we have made of our experiences, in many cases we have had the exception rather than the rule. For instance, the several untreated women who have become pregnant while under our care have done well. Several recent publications have noted this fact. It was surprising to us, however, to find that in the years following delivery these cases have continued none the worse for their gestation.

The contraindications to collapse therapy constitute a big problem. Extensive bilateral disease is the first; extensive unilateral disease in a person whose physical age

is above 45 years or actual age over 50 years. In cases whose lung survey favors a possible successful collapse, organic disease elsewhere of tuberculosis origin is not a contraindication, rather, it will often be found that secondary tubercular disease processes will be bettered by effective collapse.

A complete discussion of any one person's experiences in pneumothorax is impossible to relate short of textbook form. In the following paragraphs brief mention will be made of numerous occurrences of importance.

There is a definite group of patients in whom no pleural space can be found. In these cases manometric readings will either indicate the lodgment of the needle-tip within lung tissues or extrapleural cellular tissue. In the former, regardless of the amount of air injected, the manometric fluctuation will not change, indicating probable entry into a small bronchiole. In such a case the addition of a volatile oil to the fluid in the bottles will be detected on the patient's breath. In the latter case where the needle is lodged in cellular tissue, an increasing positive pressure will be registered and soon subcutaneous emphysema can be felt.

In cases where no reading is obtained on insertion of the needle, a frequent finding at the initial attempt, one or two simple procedures may clarify the situation. It may be the needle is obstructed by a film of fluid clinging meniscus-like to the bevelled opening, or that in its passage through the chest wall, a plug of tissue has blocked the opening. In either case gentle aspiration with a 5 c. c. syringe or pressure on the tubing leading to the chest wall will clear the offending particle; this often serves, in addition, to rule out the entry of the needle into a blood vessel and offset the possibility of delivering air therein.

A summary of our records shows that on the average the new patient with tuberculosis who has come under our care has been returned to his former occupation with certain restrictions within five months; in addition, those patients who have met with

success are not infectious to family or friends within four weeks.

CONCLUSIONS

1. Pneumothorax is a procedure that can be done safely in home or office.
2. The dangers of pneumothorax have been unduly exaggerated in the past.
3. In certain cases (hemoptysis) pneumothorax is as much an emergency procedure as appendectomy.
4. Technical matters concerning pneumothorax have been discussed.
5. An ever increasing percentage of tuberculars are believed today to be amenable to pneumothorax and allied collapse therapy.
6. From a perusal of this article, the newcomer will not be able to begin doing pneumothoraces; it will rather stimulate his interest in the problem and after the preliminary course under close surveillance, guide him through some of the problems that face the pneumothoracist.
7. It has not been our intention to portray pneumothorax as a panacea for tuberculosis. We believe, however, that abetted by surgical collapse such as thoracoplasty, phrenico-exeresis, or oleothorax, it is an indispensable weapon most useful to the general practitioner.

VERTIGO*

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Vertigo may be defined as a symptom or subjective sensation of disturbed balance. It may occur in various degrees from mild giddiness with momentary loss of balance to a sensation of rotation either of the individual or of objects about him. When the condition is severe it may lead to pulsion or veering of the individual to one side or the other. While vertigo is a cerebral symptom almost all vertigo comes directly or indirectly from the vestibular apparatus. It

is one of the most common symptoms that lead a patient to consult a physician and occurs under such varied circumstances that it is often impossible to account for its occurrence and an explanation is purely conjecture.

The maintenance of equilibrium or balance is effected by a complex coordination of nervous impulses coming to and going from the brain. Afferent impulses reach the brain from: (1) the skin, muscle, and joint sense (proprioceptive); (2) visual impressions; and greatest of all, (3) the vestibular apparatus. Efferent impulses go from the brain by way of the pyramidal tracts to the muscles. These impulses are coordinated in the brain.

It is not essential to have all three sources of afferent impulses intact in order to maintain equilibrium, as one may compensate for the other. The loss of two, however, causes loss of balance and vertigo. This explains how the blind man with a normal vestibular apparatus and normal skin, muscle, and joint sense can maintain equilibrium. Loss of either of the two latter mechanisms will cause him incapacitating vertigo and loss of balance. This fact is also well illustrated by the Romberg sign. In *tabes dorsalis*, the individual is able to compensate for this by using his vestibular apparatus and eyes to maintain balance. When he closes his eyes he is left with just one source of afferent impulses and he loses his balance. A deaf mute without vestibular function may likewise carry on well with his eyes and muscle and joint sense. Sudden loss of any of these functions in the normal man may momentarily cause vertigo but compensation will take place if two systems are left in normal condition.

The first recorded work on the experimental study of the action of the vestibular mechanism was by Flourens who, in 1824, demonstrated that destruction of different semicircular canals of pigeons resulted in turning and falling of the pigeon in different directions. Ewald's experiments in 1892 showed that in the horizontal semicircular canal a current of endolymph toward the ampulla caused a greater stimula-

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 28, 1942.

tion than when the current was in the opposite direction and that the reverse is true in the vertical canals. To Barany, we are indebted for his observations on the effect of hot and cold water douching of the ear which is now used in the caloric test. His monograph on "The Physiology and Pathology of the Semicircular Canal Apparatus in Man" published in 1907 is a classic.

ANATOMY OF EAR

The anatomy of the vestibular apparatus and some adjacent structures will be demonstrated by a short moving picture. For clinical purposes, it is necessary to know this anatomy in a general way. The internal ear located in the temporal bone is divided into two parts: (1) the cochlea or organ of hearing and (2) the vestibular apparatus or organ of equilibrium. The latter is further divided into semicircular canals, the saccule, and utricle. The semicircular canals receive stimuli when the head is rotated and are so arranged that rotation in any plane affects the endolymph in some one or more canals. The canals are paired so that for each canal there is a canal in the same plane in the opposite ear, however, the ampullae are so arranged that the flow of endolymph is toward one ampulla and away from the other. The canals may be paired as follows: (1) right and left horizontal canals; (2) right anterior vertical canal and left posterior canal; (3) right posterior vertical canal and left anterior vertical canal. The neuro-epithelium of the semicircular canal (*crista acustica*) is situated in the convex (attached) part of the membranous ampulla appearing as a transverse ridge. The hair-like processes of the neuro-epithelium are covered by a gelatinous substance, the cupola, movement of which causes a stimulation of the nerve endings. This takes place when there is a flow of endolymph within the semicircular canals.

The saccule and utricle detect movement in a straight line vertically and from side to side, respectively. The structure of the maculae acusticae of the saccule and utricle is essentially the same as that of the *cristae acusticae* except that clusters of minute

otoliths are present in the gelatinous substance covering the maculae.

The nerve pathways from the labyrinth to the perception centers have never been proved histologically. It is supposed that a group of fibers go from the horizontal canal to the vestibular nuclei and other groups from the vertical canals to the nuclei. These have connections with cerebellar nuclei which in turn connect with the temporal lobe of the opposite side by way of the superior cerebellar peduncle (*brachia conjunctiva*). Vertigo perception centers are in the temporal lobes and also parts of the frontal lobes. The vestibular nuclei also have connections with the anterior horn cells of the spinal cord (vestibulo-spinal tract), and with a number of cranial nerve nuclei including the vagus, oculomotor, abducens, trochlear, and spinal accessory. These connections account for some of the automatic responses to vestibular stimulation giving rise to vomiting, nystagmus, or head movements.

CAUSES OF LABYRINTHINE DYSFUNCTION

There are several types of dizziness caused by labyrinthine dysfunction. A. J. Wright of England has classified these as follows: (1) the typical semicircular canal attack in which there is a sensation of rotation of the individual or of objects about him; (2) those with sensation of being forced to one side or the other; (3) attacks in which the patient is suddenly thrown to the ground, either forward or backward, probably due to involvement in the otolith organs; and (4) those with a more or less constant unsteadiness.

Vertigo takes place in such a variety of conditions that it is impossible to describe each here. Almost all cases may be considered to be due to infection in the labyrinth, to chemical or physical activity in the labyrinth (including effusion, the action of toxins, and metabolic processes), or to interference in the coordination of nerve impulses involved in the function of equilibrium.

Acute labyrinthitis, whether suppurative or serous, is one of the most common causes of vertigo encountered by the otologist. It

usually results from acute infection in the middle ear or mastoid by extension of the disease and is a serious complication. The dizziness is of a rotational type with spontaneous nystagmus present. Serous labyrinthitis may take place in any acute infectious disease (mumps) with an effusion into the labyrinth or it may be caused by herpes involving the eighth cranial nerve. These cases caused by acute infection may be confused easily with a toxic irritation of the vestibular nerve in these same diseases. Another condition that may be considered to be a cause of vertigo is a disturbance of metabolism of sodium with effusion into the labyrinth. More of this will be said in connection with Ménière's disease. Syphilis, either congenital or acquired, may lead to labyrinthine involvement. A large percentage (50 per cent) of congenital syphilitics have labyrinthine invasion with dizziness, vomiting, and deafness. In acquired syphilis it is unusual but does occur as a late secondary manifestation and leads to destruction of the labyrinth in two to three weeks if untreated.

Blocking of the eustachian tube resulting in catarrhal otitis media may produce vertigo. Otitis media or irritation of the drum membrane by foreign substance may also be a cause.

Another group of conditions causing vertigo are diseases affecting the circulation of the labyrinth. Heart disease, kidney disease, arteriosclerosis, and anemias may increase or decrease the amount of blood and the blood pressure in the labyrinth giving rise to dizziness. There may be actual hemorrhage in the labyrinth. In this same class we may put anything that would alter circulation or oxygenation of the labyrinth such as asphyxia, gas poisoning or shock.

It has been mentioned that diseases of highly toxic nature often involve the labyrinth and cause dizziness. In somewhat the same way certain drugs like nicotine, quinine, salicylates, and alcohol may cause dizziness. Other drugs such as benzidine, and adrenalin may indirectly cause vertigo by their effect on the blood pressure. Foci

of infection in the sinuses, tonsils, teeth, or any part of the intestinal tract may cause labyrinthine irritation.

Conditions having no direct connection with the vestibular apparatus but being the cause of dizziness are certain eye conditions and certain intracranial diseases or tumors. Their production of the symptom of vertigo is usually dependent on either interruption of nerve impulses or production of abnormal stimuli in the system for the maintenance of balance. Eye conditions giving rise to vertigo are usually concerned with imbalance of the extra-ocular muscles. Any condition that causes diplopia or improper or poorly fitted eye glasses may cause dizziness. Intracranial diseases (tumors, abscesses, aneurysms or meningitis) may cause interruption of vertigo pathways or pressure effects. Tumors or abscesses in the posterior fossa near the cerebellum or in the cerebello-pontile angle are more likely to cause vertigo than lesions in other locations. Study of labyrinthine reactions is often helpful in the diagnosis of intracranial lesions (Shuster). Head injuries (concussion) may cause persistent vertigo for a long time after other symptoms have subsided.

A syndrome which has for its chief symptom vertigo has been saved until last as its cause is uncertain. Ménière's disease is characterized by attacks of vertigo, tinnitus and deafness. It comes on suddenly and the vertigo is usually severe. As to etiology, Ménière (1861) first considered the syndrome he described so well, as a labyrinthine hemorrhage; however, this is no longer believed to be true. Mygind and Dederding believe the condition to be due to a disturbance in water metabolism. Furstenberg doubts this and feels that sodium metabolism is at fault. Crowe believes that, although the symptoms of Ménière's disease are due to intralabyrinthine irritation, this irritation is due to a circulatory or chemical disturbance in the endolymph and not to foci of infection in the ear or in other parts of the body. Some say allergy plays a part (Dean) while Dandy believes the lesions to be in the nerve itself and not

the end-organ. It is easy to see that there is little agreement as to the cause of Ménière's syndrome except that some part of the vestibular system including its pathways is involved and the pathology is little known in spite of study of large numbers of cases.

It is necessary to diagnose the cause of vertigo, if possible, in order to treat the condition. Some cases, of course, will fall into the classification of Ménière's syndrome in which the cause is not known.

DIAGNOSIS

The first step in diagnosis is a thorough general physical examination. Particular attention should be paid to the cardiovascular system, including chemical and microscopic study of the blood. The renal system should also be checked as well as a study of the gastrointestinal tract. A thorough search should be made for foci of infection in the tonsils, sinuses, teeth, prostate and gallbladder. Neurologic examination should be made with special attention to signs of cerebral disease. A careful eye examination should be made, including refraction and study of eye muscle balance and the presence or absence of spontaneous nystagmus should be noted.

The ears should then be examined. The presence of foreign bodies or inflammation in the external ear canals should be noted. The middle ear is examined and the patency of the eustachian tube tested. Hearing tests are made preferably with an audiometer to determine the functional state of the hearing apparatus. This is often very important in assigning a diagnosis for a patient suffering with vertigo.

Finally, the vestibular tests are performed and they represent an important step in the diagnosis of the cause of vertigo. There are two times when it may be well to defer these tests: (1) in a case suspected of being an acute suppurative labyrinthitis, and (2) it may be unwise to do a caloric test with a perforated drum when it is the thought that douching with water might do harm to the ear. The vestibular tests most frequently employed are:

(1) the rotation tests; (2) the caloric test, and (3) the galvanic test.

The rotation tests are best carried out by using a special rotation chair with head rest and foot rest for the comfort and better position of the patient. For testing the horizontal canals, the patient is seated with his head inclined 30° forward. The patient is now rotated ten times in 20 seconds. Time is noted when the chair is stopped and the duration of the horizontal after nystagmus is noted. The normal duration is 15 to 30 seconds, usually about 24 seconds. During rotation to the right there is a relative flow of endolymph to the left with the endolymph gradually catching up with the turning head. When the rotation is suddenly stopped, the fluid inertia of the endolymph carries it on with a flow in the direction of turning. After turning to the right, then the flow of endolymph would be toward the anterior or ampulla end of the left horizontal canal and away from the right ampulla. Turning to the right therefore causes greater stimulation of the left horizontal canal and is used to test that canal. The slow or vestibular portion of the eye movement is to the right and the quick component is to the left. Nystagmus is named by the direction of its quick component or in this test, there is horizontal nystagmus to the left. Any increase in the duration of the after nystagmus indicates an irritated labyrinth, while a decrease indicates hypo-irritability or the absence of nystagmus indicates a dead horizontal semicircular canal.

The test may be repeated for the right horizontal canal by turning to the left or counter clockwise.

The past-pointing reaction from rotation may be elicited by turning the patient ten times in ten seconds. A normal response is a past-point (illustrated in moving picture) of about 12 inches in the same direction as patient is turned.

The vertical canals may be tested by tilting the head to a position that will put the canals to be tested in as near a horizontal plane as possible (90° forward or 60° back-

ward). This is not as practical as testing the horizontal canals and is not used often.

The caloric test is the simplest and has the advantage of stimulating the labyrinth of one side only. Compared with the cold caloric test, the rotation tests are of little value except for experimental studies. There are several variations of the caloric test but in principle they are all the same, that is, the ear is doused with cold (68° F.) water which causes a flow of endolymph and resultant stimulation of the labyrinth. At this temperature, it takes about 40 seconds for nystagmus to start and when the head is tilted 30° forward the nystagmus is to the opposite side and is rotary in type. If the head is tilted back 60° the reaction remains the same except that the nystagmus becomes horizontal.

The galvanic test is useful in differentiating between a dead labyrinth and an eighth nerve lesion. Stimulation of the nerve may be effected with the electric current even with a dead labyrinth if the nerve is normal.

TREATMENT

The treatment of vertigo may present as many difficulties as the search for the cause. The most effective treatment of vertigo is the removal of the cause if this is possible. There are some cases where the cause may be found as in acute labyrinthitis that may be helped by rest, sedatives, and treatment of the ear condition causing it or it may be necessary sometimes to operate on the labyrinth.

Many treatments for Ménière's disease have been recommended. Horton has had some good results using intravenous injections of histamine 1 mg. in 250 c.c. of physiologic saline solution. This is given slowly and may be repeated the next day if necessary. Histamine is supposed to lessen the permeability of the capillaries so cuts down local edema. Mygind and Dederding restrict fluids and sodium chloride. Furstenberg uses a salt free diet to limit the intake of sodium, and gives large doses (3 gm. with each meal for three days fol-

lowed by a two day rest) of ammonium chloride to increase the elimination of sodium. These medical treatments may be tried with any case of vertigo where search for the cause has failed.

Surgical treatment of vertigo may be used if medical treatment has failed. Section of the vestibular portion of the eighth nerve as done by Dandy has been very successful and carries almost no mortality in the hands of a competent neurosurgeon. If the hearing is already lost the whole eighth nerve may be severed if desired. Injection of alcohol or formaldehyde into the labyrinth has been recommended by some but section of the vestibular nerve is more satisfactory and perhaps less dangerous.

SUMMARY

1. Vertigo is a very common symptom with many known and unknown causes. The mechanism of its production usually involves the vestibular mechanism directly or indirectly.

2. The essential thing in caring for a patient suffering with vertigo is the establishment of a correct diagnosis.

3. Treatment of vertigo consists of three steps: (1) Remove the cause; (2) medical treatment; (3) surgical treatment, if the others have failed.

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DISCUSSION

Dr. Dean H. Echols (New Orleans): Dr. Walls' paper has been especially interesting because he has not limited himself to one particular variety of vertigo but has surveyed the entire field. The neurosurgeon's interest in vertigo is not as great as many people suspect. Brain tumors in general do not cause dizziness except as a minor symptom. Dizziness is more frequent in severe head injuries, and in people with high blood pressure.

The neurosurgeon is especially interested in Ménière's disease, which Dr. Walls touched on briefly. In this disease, the dizziness comes in attacks. The patient is not dizzy all the time. He may be dizzy only three times a year, but when he has an attack it is worse than an epileptic fit. He falls to the floor, vomits, and perhaps cannot move for an hour. It is an attack of vertigo. The other symptoms of Ménière's disease are progressive deafness in one ear and tinnitus in the same ear. A few years ago the neurosurgeon was tempted to operate on all patients with Ménière's disease. He knew that he could give complete relief by section of the vestibular portion of the eighth nerve. Things have changed since, for with a low salt diet and substitution of potassium chloride for salt we find it is possible to keep some of these patients relatively free from attacks.

Dr. Philip H. Jones, Jr. (New Orleans): Dr. Walls' and Dr. Echols' remarks have been made chiefly with reference to disturbances within the ear mechanism that give rise to this vertigo. That leaves me to make some general remarks concerning dizziness that originates in what may be called systemic disorders. I will have an opportunity here to mention a list of these disorders, and may start by saying that they are physiologic forms of vertigo exemplified by hyperventilation and by the sensation of dizziness that follows unusual positions of the head. Those systemic disorders outside of the ear mechanism which give rise to dizziness are just as numerous and probably more so than the causes of fever. When you are invited to search, therefore, for the cause of dizziness in a patient you have an invitation to proceed along the lines of what may be called the practice of medicine.

For the purpose of brevity, I have grouped them here into: Circulatory, pressure disturbances within the cranium, toxic, nutritional, metabolic, miscellaneous, and—if you will pardon the term,—psychic.

Under circulatory, there is hypertension in which the dizziness is mostly annoying to the patient when the pressure is fluctuating. If the patient gets adjusted to a pressure of 285, he will not complain as much about dizziness as if the pressure fluctuates between 170 and 285. Hypotension such as may be present, essential hypo-

tension, in pneumonias and in congestive heart failure. Circulatory disturbances associated with arteriosclerosis, a condition found frequently in individuals of advanced years with diffuse circulatory degeneration. Stokes-Adams disease, in which the circulation falls for a matter of moments to be resumed again, is frequently initiated by attacks of dizziness.

The essayist and Dr. Echols have already emphasized toxic conditions,—toxic thyroid. Such drugs as the sulfa group. And I put alcohol here for want of a better place to put it. Next to hypertension it is probably the greatest single cause of dizziness. Allergy must go somewhere, and because it is toxic it would belong here, also chemical poisons, such as gases and lead.

Under nutritional come vitamin efficiencies, in which pellagra is probably the most active one. Berberi is uncommon but still causes vertigo.

Metabolic disease—water balance is prominent now as it was not before the vertigo began to be understood as the result of sodium chloride metabolism. The diabetic has attacks of dizziness not explained on any reasonable grounds.

Psychic causes are placed here because the patient will say that he is dizzy. Probably there is no such thing as psychic dizziness.

Dr. E. Garland Walls (in closing): Unfortunately, there are too many cases of dizziness for which we are unable to find the cause.

BLOOD VOLUME IN SOME COMMON CLINICAL CONDITIONS*

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There has been a new wave of interest in the volume of the blood in the last seven years. As is usually the case, this has been due to development of a new method^{1, 2, 3} for the determination which has many advantages over older ones. A blue dye is injected intravenously in a subject under basal conditions. Fifteen or 20 minutes are allowed for the dye to mix, then samples are taken every five minutes for 20 or 25 minutes. From these serial samples not only can the concentration of the dye be determined, but also the rate at

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which it is disappearing from the blood stream is apparent, and correction can thus be made for the amount lost during the mixing period. Colorimetry is improved, and allowance can be made for hemolysis in any of the samples. As with other dye methods the plasma is the element measured, and the cell volume is calculated from the ratio of cells to plasma in the hematocrit. Because the general body hematocrit differs from that of venous blood^{4, 5, 6} there is an error in the determination of the cell and total volumes. Results are nonetheless quite consistent, for Gibson and Evans were able to predict the volume within plus and minus 15 per cent from their chart.⁷

The blood volume varies in normal individuals with sex, being much larger in males than in females, and also with stature as measured either by the height of the individual or by the surface area.⁸ Thin individuals have smaller absolute and larger relative volumes and the opposite is the case with stout people.

There has been no recent comprehensive review of the subject of blood volume but there are a few summaries^{9, 10, 11} giving the high points of recent advances. Much of what follows is drawn from the work of Gibson who first applied the method clinically.

HEART DISEASE

In heart disease, there is no change in the blood volume unless failure is present, but when this is the case, the changes are marked. Gibson¹² found slight increase in the blood volume in patients with symptoms of diminished reserve, but without physical signs of failure. In a group with mild failure the increase was greater, about 20 per cent above normal. In severe failure the average increase is substantial, 55 per cent above normal, but there is marked variation from individual to individual. In general the most severely ill patients tend to have higher hematocrit values, that is, the cell volume increase is greater in proportion than the plasma volume increase, but the volume of packed red cells rarely exceeds 52 or 53 volumes per cent. The plasma volume is more labile than the cell

volume as seen in patients who grow worse, and also in recovery, for it changes first. As normal is approached by the patient who has been in failure, there is a decrease in the volume of both plasma and cells, the former changing more rapidly at first, but normal levels are not achieved again once failure has occurred. Much speculation about the reason for the change of the blood volume in heart failure has been stimulated, some¹³ holding that the increase is due to the increase in the venous pressure, while others¹⁴ believe the increase is the cause of the elevation of the venous pressure as a compensatory phenomenon, but no definite proof of the mechanism involved has appeared to date. It appears that the cell volume increase is closely related to the degree of anoxemia which exists¹⁵ but the wide variation of individual determinations in heart failure as exemplified in Gibson and Evans results and ours remains a challenge.

It once was thought that there exists a group of patients with heart failure of a dry¹⁶ or minus¹⁷ type, in whom the manifestations were similar to those of shock, and in whom the blood volume was supposed to be below normal. Such patients were not found by Gibson and Evans² nor by me. Ebert and Stead⁵ have recently studied carefully a group of patients, mainly with coronary occlusions, who presented a picture of circulatory collapse, but in these the blood volume was never more than very slightly below normal and they emphasize the concept that these patients suffer from marked diminution of cardiac output, rather than deficient venous return, and do not think the term shock should be applied. It might be said that a cardiac patient suffers during his life from backward failure, most of his difficulties being due to his congestion, his increased venous pressure and edema, but that he dies in forward failure when his heart at last cannot be compensated, and when his state is essentially one of extreme tissue anoxia, as in shock, but not for the same reason.

Because it is not clear whether the increased venous pressure is an advantage

or a disadvantage in congestive heart failure, phlebotomy is not indicated except in cases of acute imbalance between the systemic and the pulmonary circulation with pulmonary edema. In this acute state phlebotomy is at times life saving.

In passing it should be remarked that hypertension without heart failure is not associated with an increase in the circulating blood volume.

THYROID DISORDERS

In diseases of the thyroid gland, variations in the blood volume parallel changes in the basal metabolism.¹⁸ When the metabolism is elevated to about 50 per cent in Graves' disease, the blood volume increase averages 10 per cent high, and in myxedema it is uniformly low, about 15 or 20 per cent below normal when the basal metabolism is minus forty.

NEPHRITIS

The changes observed in the volume of the blood in nephritis¹⁹ appear to vary most closely in relation to the degree of anemia, the degree of hypoproteinemia, and the level of nitrogen retention. Anemia here as elsewhere tends to be associated with increased plasma volume and decreased cell volume. The variation is directly in relation to the serum albumin, as this falls, the volume falls. As the non-protein nitrogen level rises, the volume tends to fall. In general, the blood volume is low in nephritis when the renal function is low.

BLOOD DYSCRASIAS

With the exception of nephritis, anemia in general is attended by the same changes, no matter what the nature of the anemia. Thus, in pernicious anemia, hypochromic anemia, anemia due to chronic blood loss or of unknown etiology, and in the hemolytic familial anemias, in malaria, and in anemia due to drug intoxication, the plasma volume tends to be above, circulating red cell volume greatly below, and total blood volume slightly below normal.²⁰

Fortunately, for our routine methods in hematology, there is a very close relation between the actual decrease in circulating

red cell volume and the red blood count, the hemoglobin determination and the hematocrit. With effective anti-anemic therapy, the cell volume rises, the plasma volume decreases, and the total blood volume increases slightly. The routine methods of examination reflect these changes accurately. At a level of about ten grams per cent of hemoglobin, or a red count of about three millions, or a hematocrit level of 37 volumes per cent, there is a deficit of about 30 per cent in circulating red cells, and at a level of about six grams of hemoglobin, one and seven-tenths million red cells, or 20 volumes per cent in the hematocrit, there is a deficit of about 60 per cent of normal red cell volume. This is of importance when transfusion is contemplated to tide an anemic individual over an operation or a severe illness, for while a small individual might be helped by a transfusion of five hundred milliliters of blood, a normal sized man with a very severe deficit of cells may need a liter or more to reduce his deficit to the critical level of only 30 per cent deficit.

Polycythemia vera offers a situation essentially opposite to anemia, for these individuals have a cell volume and a total blood volume greatly in excess of normal. Dr. Kaltreider treated one such with a volume of nearly fourteen liters of blood, and even higher volumes are recorded in the literature. The best form of therapy in this situation is repeated phlebotomy,²¹ and with this treatment, a gradual decrease in the cell volume is noted. These patients get along fairly free of symptoms when the hematocrit is held near 45 volumes per cent.

PREGNANCY

Normal pregnancy is attended by marked changes in the volume of the blood, there being an increase, especially of the plasma, amounting to nearly 50 per cent, which begins early in pregnancy and is at a maximum during the tenth lunar month.²² By term, the volume has diminished to a mere 10 per cent increase, and is at a normal level ten days after delivery. Because the plasma volume increases much more than the cell volume, the so-called anemia of

pregnancy is more apparent than real, and little concern should be felt when the red count is over three million, or the hemoglobin more than 10 grams per cent. It is of interest and importance that the incidence of heart failure in pregnancy is highest at a time when the blood volume increase is maximal.

SURGICAL PROCEDURES

Anesthesia and surgical operations are attended by a ten to 20 per cent decrease in the plasma volume, but Gibson⁹ calls particular attention to the occasionally much greater losses in the "ether bed" during recovery from the anesthetic, where the loss of fluid by sweating is great, with consequent further diminution in the plasma volume. He emphasizes the importance of fluid therapy at this time. The diminution of plasma volume which occurs during artificial fever induced for therapeutic purposes is from the same cause, increased sweating, and requires similar measures. There is no significant change in the blood volume in fever induced with typhoid vaccine.

SHOCK

Shock is always attended by a diminished effective blood volume. It is not clear what the mechanism is, whether it be loss of fluid into the injured area, into the tissues generally because of increased capillary permeability, or because of the formation of stagnant pools. Plasma is the most effective agent to replace the loss. Shock is one of the situations where the method of determination of blood volume itself is most seriously open to question, because rapid disappearance slopes suggest the dye is leaking out of the blood stream, and this has indeed been found to be the case at times.²³

CONCLUSIONS

Some of the situations in which determination of blood volume has shed light on disease processes have been briefly summarized. This procedure is primarily of research interest, seldom offering critical diagnostic information, and requiring a fair outlay of time, but most valuable in enabling the physician to visualize what is

going on in the patient in heart failure, thyroid disease, nephritis, anemia, polycythemia vera, surgical operations, pregnancy, artificial fever, and shock.

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DISCUSSION

Dr. Edgar Hull (New Orleans): As Dr. Meeneely has pointed out, blood volume determinations do not play an important part in practical medicine today, but have advanced our knowledge regarding the pathologic physiology of certain diseases so that we can treat patients more rationally without actually determining blood volumes on individual patients. This is a good example of the contributions to practical medicine which are made by clinical and laboratory experiment.

POSTPARTAL HEMATOMATA OF THE VULVA AND VAGINA*

CASE REPORTS

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AND

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Two recent cases of postpartal hematomata occurring on our service have served to call our attention to the relative rarity of this condition and the paucity of literature on the subject. We have therefore felt that it would be of interest to report these two cases with a brief discussion of them and of others which have occurred at Charity Hospital.

The incidence of postpartal hematomata of the parturient canal as reported in the

literature varies from the figures of Moschcow¹ who reports one in 1,951 deliveries, to those of DeLee² who shows an incidence of one in every 7,000 deliveries.

In a study of the obstetric case histories in the Charity Hospital for the past ten years, we were able to discover only eight cases of hematomata in this region in 43,789 deliveries, or an incidence of one per 5,474 cases. That these cases deserve more than passing interest is evidenced by the fact that there were two deaths in these eight cases, both from subperitoneal extension occurring in the suprapelvic variety.

The two cases herein reported were of the immediate type, resulting primarily from trauma at delivery, and both were of the infrapelvic type.

CASE No. 1

A. F., a 20 year old colored female, gravida ii, para i, at no time throughout her gestation had she any manifestations of toxemia. The Wassermann was strongly positive. She was at term and was admitted with a history of ruptured membranes. This fact was confirmed both by bromthymol blue and nitrazine paper chemical tests. A medical induction was given and she promptly went into labor. Some three hours later the cord appeared at the vulva. A vaginal examination was made at once and revealed a single footling presentation with the cervix fully dilated. Under nitrous oxide anesthesia a rapid breech extraction was performed, resulting in a small tear around the lower vaginal tract which was promptly sutured. The baby was in good condition. Some four hours later the patient complained of an unbearable pain in the region of the vagina and vulva. Examination revealed a large swelling, involving both labia majora and the entire perineum. The mass was tense, tender, bluish and slightly fluctuant at this time. A diagnosis of a vulvo-vaginal hematoma was made. At this time it was thought best to temporize and ice packs were used locally. The swelling and pain increased, so it was decided to incise the affected part. Accordingly under nitrous oxide anesthesia a transverse incision was made in the posterior fourchette, and a clot the size of one's fist was removed. Bleeding was minimal, and a few deep U sutures were taken. Five grams of sodium sulfathiazole were then sprinkled into the cavity, followed by tight packing with merthiolate gauze. The pack was re-

*Read before the Orleans Parish Medical Society, April 13, 1942.

†From the Department of Gynecology and Obstetrics, School of Medicine, Tulane University of Louisiana, and the Charity Hospital of New Orleans.

moved in 24 hours. She remained afebrile and went home on the seventh postpartal day.

CASE No. 2

Mrs. H. B., a 32 year old white female, gravida vi, para iii, was considered to have a moderate toxemia. The Wassermann was negative. She responded well to therapy, and in time was given a medical induction. She spontaneously delivered a viable, seven pound male infant after a labor of ten and a half hours. Bleeding was considered minimal. Several hours later she complained of severe pain in the region of the right side of her vagina and right labia. At this time the right side of the vulva was swollen and exquisitely tender, and it was thought that there was extravasated urine in the urogenital diaphragm from urethral injury. The pain became intensified and the swelling increased in size. The skin over the tumor was glossy, but no bluish discoloration was seen. A vaginal examination revealed a huge hematoma of the lower right vaginal wall. Under a general anesthetic an incision and evacuation of the clot was performed. No bleeding points could be found. However, a small laceration in the region of the posterior fourchette was believed responsible for the hematoma. Several deep mattress sutures were used to obliterate the dead space, and an iodoform pack left in place. Because of a marked chill and rise in temperature the pack was removed that night, and a transfusion was given. The patient made an uneventful recovery and was able to go home on the tenth postpartal day.

DISCUSSION

These cases represent the more usual type of hematomata, in which incision and drainage with ligation of bleeding points seems to be the treatment of choice. It is well to bear in mind that where deaths have occurred the cause has usually been hemorrhage and shock from subperitoneal extension of the hematoma. This would suggest that immediate interference with a complete search for the bleeding points might be of value. In general the treatment may be said to begin with prophylaxis which would consist of: (1) Adequate treatment of toxemia in view of the apparent close connection between toxemia states and such hematomata as shown by Hamilton³ and others. In this connection it is possibly a good idea to study the prothrombin time with the administration of vitamin K and also calcium where indicated; (2) careful inspection of the vulva

and vaginal tract after delivery for tears and bleeding, with especial attention to the upper angle of lacerations or episiotomies; as this is often overlooked in suturing.

The management of small sized vulva or vaginal hematomata is usually expectant. Ice packs and pressure will usually suffice. The larger variety are best treated as soon as diagnosed by incision and evacuation of the clot, ligation of bleeding points followed by packing. It may be well to call to mind here that one must guard against infection in these cases. Transfusion and supportive measures are used as indicated. The suprapelvic or subperitoneal variety are best treated by combatting shock followed by incision and packing of the hematoma. The vaginal route is occasionally used.

CONCLUSIONS

We have presented two cases of postpartal hematomata of the vulva and vagina with a brief discussion of the incidence and treatment of these and similar cases.

We desire especially to emphasize the possibility of concealed hemorrhage in such instances, and finally to stress the importance of prophylaxis and treatment of these cases.

REFERENCES

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2. DeLee, J. B.: *The Principles and Practice of Obstetrics*, 6th ed. W. B. Saunders Co., Philadelphia, 1933.
3. Hamilton, Hugh G.: Postpartum labial or paravaginal hematomas, *Am. J. Obst. & Gynec.*, 39:642, 1940.

DISCUSSION

Dr. E. L. King (New Orleans): There are one or two points worthy of note. One is the rarity of this condition. In spite of the fact that it is rather uncommon—eight out of 40,000 deliveries, as brought out, we possibly might have found more if we had searched the records more intensively or if it had been properly set down on the records so that they could have been cross indexed. However with all due allowance for those factors it still remains a rare condition.

Last year out of 6,400 deliveries, only two cases were reported. There were only two on the ward for that year and I have seen only three or four in private practice and consultations; I do not remember any in my own patients. So you see it is not very common after all.

The chief point about the treatment, as brought out here, is opening widely, finding bleeding

points, and suturing the bottom of the cavity but not too tightly, and possibly leaving a light pack in for a few hours for hemorrhage. The point about not suturing too tightly is this—that we are dealing with vascular and very friable tissue and to get too enthusiastic in suturing more harm than good may be done. Secondly there is the possibility of infection; therefore leave the tissues somewhat widely open. Of course in the past year or so we have been in the habit of putting in sulfa-drugs.

The main points are the question of prompt evacuation and not too tight sutures; use of sulfa-drugs and a light pack for a short time to control the condition.

Dr. J. P. Michaels (In closing): In one case studied where there was failure to close the upper angle of the episiotomy, the autopsy revealed that blood had dissected subperitoneally. An ante-mortem diagnosis had not been made. It might be well to think of these particular cases when one has a postpartum patient who goes into shock and does not recover readily with transfusions and other measures. This applies particularly to patients where one is fairly certain that he is not dealing with a case of ruptured uterus. Whitridge Williams reported 33 cases in 1922, where the mortality rate was well over 50 per cent. Most of these cases were either late in being diagnosed, or were not discovered until after death.



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THE NEED FOR MEDICAL OFFICERS

The rapid expansion of the Army which ultimately may obtain a size of some five million men, has created a demand which is almost unbelievable for physicians to take care of the sick and injured soldiers. These doctors must be found and must be available for combat troops.

At the recent meeting of the American Medical Association the need for doctors was emphatically stressed by Mr. Paul Mc-

Nutt of Social Security under whose charge is Procurement and Assignment, and Colonel Love in charge of the personnel in the office of the Surgeon General of the Army. These two men, in addresses delivered before the House of Delegates, indicated that sooner or later, probably sooner, there would be needed 50,000 medical men, or one-third of the total active medical practitioners in this country. The Army forces want, need and must have the younger men. The speakers indicated that if any men under the age of 40 did not volunteer or seek a commission that measures would be taken to see that they did get into the Army. A few of the younger men might be considered as essential to such necessary activities as the continued training of prospective medical men, as being necessary in defense areas and as being essential to a few war industries. These men under 40 will be few and far between. Ultimately it may be that any physically able doctor under the age of 45 would be in the Army.

It behooves relatively young doctors to consider what has been said from authoritative sources. There is no better time than now to enter the Medical Corps of the Army and this should be done promptly. The medical profession has bound itself to secure physicians for the Army and Navy. Procurement and Assignment Service is the child of medicine. It was the idea and concept of the leaders of medicine that the modern physician is sufficiently patriotic to volunteer for the defense of his country. If Procurement and Assignment Service falters and fails then the medical profession in this country will have obtained a black-eye which will take a long while to resume its normal coloration.

Procurement and Assignment has not only to do with obtaining of medical men for the Army but also to provide for civilian needs. The professional man who is left behind must realize and appreciate that even as an older man he has been relatively inactive, he must get back into harness again; those who are now actively engaged in their profession have already begun to appreciate that they must take on added duties, augmented responsibilities and in-

creased work. Not only does the medical profession expect this but the American people are confident that the great profession of medicine will not fall down at this time and during this emergency. The response of doctors to the call to service in this present World War II is in no way comparable to that of the last war. It was said that in the last war three times as many men volunteered, requested and received commissions as in the present war. This is not a heartening response to our country's call. Of course, various reasons have been advanced for this difference between 1917 and 1941-42. Procurement and Assignment is one of the reasons put forth for fewer doctors going into the Army than twenty-five years ago. It is believed that many men feel that Procurement and Assignment will call upon them when needed if they have indicated their desire to serve. Procurement and Assignment service, however, has nothing to do actually with the man getting in the Army. The doctor must of his own volition ask for service and a commission, upon receipt of which he will be ready to serve.

ANALYSIS OF THE PHYSICAL EXAMINATION OF SELECTEES

A report has been issued by the Selective Service system which, in many ways, is extremely interesting not only to the physician but also to the sociologist and psychologist. It is of primary interest, however, to the physician.

This report is a complete summary of the detailed data of nearly 20,000 reports of the physical examination. Of course, it is not statistically significant but it definitely shows trends. The study of these particular carefully analyzed examinations is projected into terms of one million registrants who were not qualified for general military service for physical or educational reasons. By far the largest number were rejected on account of teeth conditions, 188,000 of the 900,000 rejected for physical reasons. The extremely high standards have, since this first registration, been materially lowered

and very many fewer men recently have been rejected on account of some one or another abnormality of the teeth. The next highest cause for rejection was the eyes. However, it is comforting to know that 71 per cent of the total could see as well or better than normal and 91 per cent could more than meet the minimal requirements for acceptance in the Army. These minimal requirements will probably be materially changed also. Most of the musculo-skeletal defects which were the next most frequent causes for rejection, are troubles which may be remedied, which rehabilitation will have to be undertaken by civilian physicians. Venereal diseases, mental and nervous defects and hernia accounted for between 56-57,000 rejections each. It is of some interest to know the relative frequency of different types of organic disease, for example 4.4 was the rate per 1000 examined of asthma as contrasted with a rate of 0.6 for bronchiectasis. The rate of far advanced tuberculosis was only 0.05 per 1000 and that of moderately far advanced 1.3 and minimal 0.1. These are most reassuring figures and indicate very definitely the marked advance that has been made in the control and prevention of tuberculosis. On the other hand, mitral heart disease was found in 13.5 per 1000, indicative of the toll that rheumatic fever takes yearly in the younger population. On the contrary, aortic valvular lesions were extremely rare, evidently syphilis had not had time to exert its influence on the heart and aorta of this younger group of examinees. Surprising that hypertension was found in 602 of 20,000 examined, a rate of 30.2, whereas hypotension had a rate of 2.0. One may expect to find dextrocardia, according to this report, in one of every 2000 people examined, and pernicious anemia in one young person in every 20,000. Hodgkin's disease is equally infrequent. Hernia may be anticipated in approximately 38 of every 1000 men examined, whereas nephritis would be found in only 2.7. A varicocele was present in 628 of the 20,000 registrants, whereas peptic ulcer occurred in only 87. Practically no abdominal diseases of any moment except

peptic ulcer were discovered. Acne is a common skin condition. Hemorrhoids are common as are varicose veins. On the other hand, neurologic conditions are very rare but mental deficiencies can be expected in about 11 of every 1000 men between the age of 21 and 35. Mental disorders of various types were found in 362 of nearly 20,000 registrants, giving a rate of 18.2 per 1000.

Of the group of young men in this age period it will be found that their average weight is 150 pounds and average chest measurement will be 33.9 inches, while the average height is 67.5 inches. It states in this report that the acceptance for military service for the country man was 61.9 per cent, while those from urban areas were accepted in 57.6 per cent.

CERVICAL RADICULITIS

One of the pathologic conditions which apparently is definitely on the increase, at least in so far as its recognition is concerned, is root pain as result of hypertrophic osteoarthritis of the spine. The more frequent recognition of this condition than in the past may be explained by two factors, the one being the very much greater frequency with which x-rays are being made at the present time than in the past, and the other that there is a greater incidence of older people in whom this type of arthritis, possibly as an expression of advancing age, is quite common. This so-called peripheral neuritis has been reported extensively and many characteristic symptoms have been described.

Osteoarthritis of the cervical spine, according to Kelly,* may be responsible for many irregular and vague symptoms from

pain in the neck to pseudo-angina, to headache, earache and facial neuralgia. Furthermore, the pain may occur in the shoulders and arms and the cause can usually be demonstrated by roentgenography but not invariably.

The sensory symptoms may, of course, vary from extreme degrees of pain to simple paresthesia and a gnawing sensation in the head, neck or arms. There is one characteristic feature which is outstanding in making the diagnosis, namely movements of the spine aggravate the subjective sensations. These movements may of course be varied and of several kinds; raising the head from the pillow, pain on lifting or prolonged sitting may cause distress; jarring in walking or riding may bring on sensory disturbances. It is rather unusual to find limitation of motion in the neck on physical examination but hyperextension of the spine is likely to exaggerate or aggravate the symptoms so that pain, for example, may radiate down the arm when the spine is overextended.

The symptoms of cervical involvement are usually in the lower spinal vertebrae because for one reason the sixth and seventh cervical nerves, although the largest of these cervical nerves have the smallest exits from the spine; then also these cervical vertebrae are not as adequately protected as are the higher ones to repeated minimal trauma. It is obvious why most of the patients will have pain at the tip of the shoulder which is supplied by the fourth cervical, on the outer aspect of the arm supplied by the fifth, and the deltoid muscles supplied by the fifth and sixth. Hence it is obvious according to Kelly, that any one complaining of pain and limitation of motion in the shoulders should have an x-ray made of the cervical spine. Incidentally in Kelly's series of 40 cases, eight of the patients complained of angina pain.

The author employed physiotherapy, gave large doses of salicylates and brewers' yeast tablets daily, together with, in a certain number of cases, x-ray therapy. These therapeutic procedures are apparently beneficial in the management of these patients.

*Kelly, LeM. C.: Chronic hypertrophic osteoarthritis in the cervical spine with radiculitis: A report of 40 cases with a review of the literature, together with some notes on effective methods of treatment, *New York State J. M.*, 42:144, 1942.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

During the month of June the Society held one regular scientific meeting. The program was as follows:

Successful Suture Stab Wound of the Heart—By Dr. Donald B. Williams.

Results of Gastric Resection in a Single Service at Charity Hospital—By Dr. Lawrence H. Strug.

Histaminase in the Treatment of Duodenal Ulcer—By Dr. Gordon McHardy.

NEWS ITEMS

Dr. Howard Mahorner presented a paper on Some Surgical Aspects of Vascular Disease at a meeting of the Mobile County Medical Society in Mobile, May 16.

Dr. C. A. Stewart recently attended meetings of the medical technologists and the State Medical Association of Texas in Houston.

Honorary degrees of doctor of science were conferred by Loyola University to Drs. George J. Taquino and Dr. C. Victor Vignes at commencement exercises held May 18.

Dr. F. L. Jaubert was re-elected president of the Louisiana Society for Crippled Children at the annual meeting of this Society held in New Orleans, May 24.

Drs. Philip J. Bayon, Henry Blum, W. R. Bufington, William B. Clark, Val Fuchs, Mercer G. Lynch, and W. A. Wagner attended a recent meeting of the Louisiana-Mississippi Ophthalmological and Otolaryngological Society in Jackson. Dr. Fuchs was elected president of the Society.

Dr. William B. Clark spoke on Kodacrome Clinic of External Eye Diseases at the annual banquet of Emory Alumni Clinics in Atlanta, June 4.

Dr. William B. Clark was a guest of the American Board of Ophthalmology, which board met in conjunction with the American Medical Association meeting in Atlantic City, June 8-12.

Dr. Isidore Cohn attended a meeting of the American Association for the Surgery of Trauma in Boston, June 4-6.

Dr. Max M. Green recently attended a meeting of the American Urological Association in New York City.

Drs. John H. Musser, Alton E. Ochsner and Wilbur C. Smith were principal speakers at the recent annual senior-faculty dinner of the college of medicine of Tulane university.

Dr. R. C. Voss was elected program chairman of the American Life Medical Section at the convention of this group in Colorado Springs, June 6.

Drs. P. T. Talbot and Julius L. Wilson attended the dedication of the Greenwell Springs Sanitarium, Greenwell Springs, June 3.

EDWIN L. ZANDER, M. D.,
Secretary.

CALENDAR

- July 1. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
- July 2. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m. Baptist Hospital, Executive Meeting, 8 p. m.
- July 6. Orleans Parish Medical Society, Board of Directors, 8 p. m.
- July 7. Eye, Ear, Nose and Throat Staff, 8 p. m.
- July 8. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
- July 9. New Orleans Hospital Council.
- July 13. Orleans Parish Medical Society, Joint Scientific and Second Quarterly Executive Meeting, 8 p. m.
- July 15. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m. Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.
- July 16. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- July 20. Clinico-pathologic Conference, Baptist Hospital, 8 p. m.
- July 22. Clinico-pathologic Conference Charity Hospital Morgue Amphitheater, 1:30 p. m. French Hospital Staff, 8 p. m. Catholic Physicians' Guild, 8 p. m.
- July 23. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m. DePaul Sanitarium Staff, 8 p. m.
- July 29. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
- July 30. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- July 31. L. S. U. Faculty Club, 8 p. m. New Orleans Hospital and Dispensary for Women and Children Staff, 8 p. m.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

FIFTH DISTRICT MEDICAL SOCIETY

The Fifth District Medical Society conducted a special meeting on June 15 for the Procurement and Assignment Service at which a large attendance was recorded. Major George R. Benton, U. S. Army Medical Corps, spoke of the urgent need of doctors in the army and announced that Dr. W. A. Rodgers was appointed chairman of the Fifth District Procurement and Assignment Service. The Society, after Major Benton's speech, had a special called meeting and elected six members of a committee to work with Dr. Rodgers as chairman. These are Doctors George Wright, George Snellings, P. W. Calliham, J. P. Davis, C. C. Thompson, and A. J. Reynolds. We have recently lost our secretary, Dr. R. H. Frost, who has been called to active duty with the Navy as a Lieutenant Commander.

W. V. Garnier, M. D.,
President.

SEVENTH DISTRICT MEDICAL SOCIETY

The regular June meeting of the Seventh District Medical Society was called to order at Welsh by Dr. A. H. Forman, presiding. The regular order of the business was dispensed with due to the very long program that was anticipated.

Dr. J. Shirley Sweeney of Dallas, Texas, read a most interesting paper entitled, "Interpretation of Blood Pressure." Dr. Sweeney was then followed by Dr. Paul C. Williams of Dallas, Texas, who gave a paper entitled, "Low Back Pain." He also demonstrated the examination of a back. These papers were highly appreciated by the audience who responded by making both Dr. Sweeney and Dr. Williams honorary members of the Society.

Major George Benton, representing the Surgeon-General's office, then spoke on the Procurement and Assignment Committee, answering numerous questions that were propounded to him by members of the Society and stating quite frankly that all doctors under 45 would be eventually called in service.

Dr. P. T. Talbot, Secretary of the State Medical Society, then talked on "Cooperation of the State and Local Society with the Armed Forces."

Representatives from Opelousas then requested that the next meeting be held in Opelousas.

W. A. K. Seale, M. D.,
Secretary.

EAST BATON ROUGE PARISH MEDICAL SOCIETY

A special meeting of the East Baton Rouge Parish Medical Society was held at the Baton Rouge General Hospital on June 17. Present at this meeting were Major George R. Benton and Captain Joseph H. Fox of the Medical Enlistment Board of the State Procurement and Assignment Service, who brought to the attention of the members present the need of enlistment of physicians and explained the procedure which should be followed in this regard. Much valuable information was furnished and it is felt that the wholehearted cooperation of Louisiana doctors is assured.

Dr. P. T. Talbot, Secretary of the State Society, was also present and stressed the fact that the Louisiana State Medical Society is cooperating one hundred per cent with the Procurement and Assignment Service.

ARMY HOSPITALS ORDERED OUT

The General Hospital Number 24, Tulane University, and Number 64 of Louisiana State University have been ordered into active service as of June 15, 1942. The personnel of the two units is given below:

GENERAL HOSPITAL UNIT No. 24
Lt. Col. Mims Gage, Director of Unit

MEDICINE

Lt. Col. Roy Turner, Head of Division of Medicine
Majors

Archinard, John Joseph
Bayon, Henry Joseph, Jr.
McLester, James Bowron
Watkins, James Harold
Wilens, Carl John

Captains

Dyer, John Lewis
Everett, Peter
Cohen, Stanley
Marks, Hippolyte Peter, Jr.

Matthews, Edward de Saunhac
Vieth, Richard Peter
Welch, John Darrius

Lieutenants

Gordon, Abraham Maury
Joseph, Cheney Cleveland
Miles, Henry Harcourt Waters
Mundt, Leslie K.
Poole, Pierre P.
Snively, John Robert

SURGERY

Lt. Col. Mims Gage, Head of Divisions of Surgery

Majors

Charbonnet, Louis Sidney, Jr.
Colcock, Bentley Preseott
Cox, Francis James
Ray, Edward Hunt
Rosen, Warren Leucht

Captains

Bayon, Philip Joseph
Boles, William McDonald
Giles, Elbert Jackson
Holcombe, Gordon, Jr.
King, Henry Allen
Lynch, Mercer Genin
Smith, Marvin Colwell
Vincent, Richard Wiltz
Weed, John Conant

Lieutenants

Meade, Robert James
Sabatier, Joseph Adolphe
Silvey, Mortimer
Trout, Philip Cocks

RADIOLOGY

Captain

Fishbein, Harry

ANESTHESIA

Major

Grant, George Bass

PATHOLOGY

Major

Colvin, Samuel Harvey, Jr.

Lieutenant

Weiss, Thomas Edward

DENTISTRY

Major

Rossner, Charles William

Captains

Chambers, Charles Alvin
Diaz, Abram Henry

Lieutenants

Healey, Charles Shepard
Perdue, Ervil Luther
Schwartz, Louis Saul
Wolfe, Frederick Jakob, Jr.

PHARMACOLOGY

Second Lieutenant

Vinci, James Dominic

GENERAL HOSPITAL UNIT No. 64

MEDICAL SECTION

Lieutenant Colonel Ben R. Heninger, Director of
Unit and Head of Medical Sections

Majors

Oscar Blitz, Assistant Chief
Charles B. Kennedy
Carlo J. Tripoli
J. O. Weilbaeher, Jr.

Captains

Homer J. Dupuy
Marcel J. Foret
William R. Galbreath
Robert B. Haspel
Murrel H. Kaplan
Harry Meyer

Lieutenants

Edgar P. Breaux
Frederick A. Eigenbrod
William G. Fisher
John E. Garcia
Bernard A. Goldman
Abe Mickal
Robert P. Morrow
Carl H. Rabinowitz

SURGICAL SECTION

Lieutenant Colonel Charles J. Miangolarra, Chief

Majors

Lawrence H. Strug, Assistant Chief
Hugh Ilgenfritz
Henry Reichard Kahle
Robert M. Willoughby

Captains

Irvin Cahen
Rudolph Ellender
Arthur V. Hays
George Haik
Samuel Karlin
William Norman
Gilbert C. Tomskey
Benjamin D. Van Werden
Donald B. Williams

Lieutenants

Samuel Abramson
Claude Craighead
Bernard DeMahy
John L. Kron
George W. Vickery

DENTAL SECTION

Captains

Clyde G. Barthelemy
Francis B. Ducasse

Robert W. Gaston, Jr.
Harold W. Peterson

Lieutenants

John P. Schiro
Harold F. Smith

LABORATORY SECTION

Lieutenants

Charles L. Blumstein
Joe Albert Risser

X-RAY SECTION

Captain

Sam Levi

Lieutenant

Nicholas J. Chetta

MEDICAL ADMINISTRATIVE

Majors

Henry D. Ogden
William Rivenbark

Captains

Adrian Kammeraad
Lawrence Burt
Garland W. Middleton

Lieutenant

Harold Tassin

AMERICAN MEDICAL ASSOCIATION
MEETING

The following doctors attended the meeting of the American Medical Association in Atlantic City, June 9-12: W. H. Browning, C. P. Rutledge, W. R. Mathews and George S. Wolfe of Shreveport; O. A. Eaddy, Keithville; M. H. Foster, Pineville; L. W. Martin, Selburg; J. E. Walsworth and J. Q. Graves of Monroe; Ruth G. Aleman, Rufus H. Alldredge, Charles A. Bahn, Robert H. Bayley, Henry N. Blum, W. D. Beacham, W. B. Clark, Stanley Cohen, C. G. Collins, Lily L. Dismuke, Harry Fishbein, G. H. Hauser, R. H. Heeren, Edgar Hull, Harold L. Kearney, W. A. Knolle, Robert C. Lowe, Alton Ochsner, J. H. Musser, H. T. Engelhardt, John Adriani, Donovan C. Browne, W. R. Buffington, Guy A. Caldwell, Sam Hobson, Maurice Lescale, Antonio Mayoral, R. E. Russell, Harry C. Wall, T. A. Watters, Urban Maes, G. R. Meneely, L. J. Menville, S. B. Nadler, W. A. Sode-man, M. A. Spellberg and G. J. Taquino, all of New Orleans.

Dr. T. A. Watters was elected Vice-Chairman of the Section on Nervous and Mental Diseases.

At the American Medical Golf Association, Dr. C. P. Rutledge of Shreveport distinguished himself by winning the prize donated by Dr. B. R. Kirklin of Rochester, Minnesota, to the member in the roentgenologic section making the best net score.

LOUISIANA PHYSICIANS IN THE
PHILIPPINES

From latest information obtainable from various sources, it appears that Commander Lea Bennett Sartin, Tulane '13, and Major Edwin S. Kagy, Tulane '34, have been taken prisoners in the Philippines.

Also it has been reported that Dr. William R. Davis, Tulane '34, a civilian doctor with an American sugar plantation at Iloilo, Panay, Philippine Islands, has also been taken by the Japanese.

REED MEMORIAL MEDAL

The Walter Reed Memorial Medal of the Louisiana State Medical Society was presented by the President, Dr. Emmett L. Irwin to Dr. William Riggs Whitehouse, a graduate of the 1942 class of Tulane Medical School, on the occasion of the Ivy Day program on Monday, June 1, 1942.

NEWS ITEMS

The American College of Physical Therapy will hold its 21st Annual Session September 9-12 at the Hotel William Penn, Pittsburg, Pa.

The American Red Cross announces that a new textbook on Red Cross Home Nursing will appear on or about July 1. This book is priced at sixty cents and may be obtained at any Red Cross Chapter.

The National Society for the Prevention of Blindness announces that the Leslie Dana Gold Medal for outstanding achievements in the prevention of blindness and the conservation of vision will be given this year to Lewis H. Carris, Director Emeritus of the National Society for the Prevention of Blindness.

It is interesting to note that the American Red Cross has sent to Russia 1,000,000 tablets of sulfapyridine, 4,000,000 of sulfanilamide, and 1,500,000 of quinine. In addition to these drugs they have sent nearly 3,000,000 pounds of laundry and toilet soap, and 100 tons of surgeon's green soap. In addition to these particular supplies they have also sent an enormously large number of hypodermic needles, surgical gloves, tourniquets, syringes, forceps and other essential supplies.

The National Foundation for Infantile Paralysis has prepared a small booklet on "Kenny's Method of Treatment for Infantile Paralysis." This excellent work of some forty-six pages may be obtained from the Foundation, 120 Broadway, New York.

SOUTHERN PEDIATRIC SEMINAR

The 22nd Annual Session of the Southern Pediatric Seminar will be held at Saluda, North Carolina, July 20-31. A list of distinguished speakers

have been obtained to present the formal talks and lectures, as well as to conduct clinics and round table discussions. Dr. Charles J. Bloom of New Orleans is one of the faculty conducting this seminar.

Dr. Bela Halpert has resigned from Louisiana State University to accept position as Director of Laboratories of the University Hospitals, the University of Oklahoma School of Medicine, Oklahoma City, beginning July first.

UNITED STATES PUBLIC HEALTH SERVICE

Passed Assistant Surgeon Robert L. Zobel has been ordered to Baton Rouge, Louisiana, for duty. Assistant Surgeon James A. Ringer has been relieved from duty in the Marine Hospital of New Orleans and ordered to Coast Guard Training Station in Algiers. Passed Assistant Surgeon Samuel J. Nichamin has been ordered from Washington to the United States Public Health Service District No. 4 in New Orleans.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Section of Epidemiology of the Louisiana State Board of Health shows that for the week ending May 16 there were listed 399 cases of syphilis, followed by the following diseases in order of frequency in numbers greater than 10: 223 cases of measles, 189 of gonorrhea, 66 of chancroid, 52 of mumps, 29 of pulmonary tuberculosis, 18 of food poisoning, 15 of lobar pneumonia, 14 of chickenpox, and 11 of typhoid fever. The food poisoning outbreak occurred in Iberia and Tangipahoa Parishes, 8 cases for the former parish and 10 in the latter. Two cases of undulant fever were reported in this week, one from Caddo and one from Lafourche Parish. The unusually high incidence of measles, chancroid, gonorrhea, and syphilis is accounted for by the fact that many of these cases were reported from army camps. For the week ending May 23 there were listed 404 cases of syphilis. The epidemic of measles continued with 114 listed for this particular week. Other diseases in numbers greater than 10 included 64 of gonorrhea, 34 of mumps, 36 of whooping cough, 22 of pulmonary tuberculosis, 13 of typhoid fever, and 10 of chickenpox. The typhoid fever cases were scattered throughout the State, no one parish having more than one case except Natchitoches, in which three were discovered. There were several cases of typhus fever also reported this week, and also for the week ending May 30. Other listed diseases for this particular week included 308 cases of syphilis, 155 of gonorrhea, 78 of measles, 30 of pulmonary tuberculosis, 19 of hookworm infestation, and 16 of mumps. A case of poliomyelitis was reported in one of the army camps. The information is

not available for the week closing June 6. For that one which came to an end on June 13, there were recorded 294 cases of syphilis, 88 of gonorrhea, 70 of measles, 46 of pulmonary tuberculosis, 21 of mumps, 13 of chancroid, 12 of whooping cough, and 10 of pneumonia. Three cases of poliomyelitis were reported this week, two from Orleans and one from St. Charles. There were listed also four cases of typhoid fever and one of typhus fever. Undulant fever was found in one instance in Acadia Parish. Many of the cases of syphilis and gonorrhea were reported from army camps.

HEALTH OF NEW ORLEANS

The Bureau of the Census, U. S. Department of Commerce, has reported for the week ending May 23 there were 132 deaths in the City of New Orleans, divided 87 white and 45 negro. Ten of the deaths were in children under one year of age, divided equally between the two races. There was a sharp diminution in the number of people dying in the city for the week that closed May 30. Of the 110 deaths in the city this week there were 62 whites and 48 negro deaths, with only five infants dying, three white and two colored. For the week terminating June 6, the figures approached more nearly the three year average than the previous week. In this week the 133 deaths were divided 70 white, 63 negro. Evidently the hot weather was taking its toll of infants, because in this particular week there were four times as many infant deaths as the previous week. These were proportioned 13 white and 17 negro infants. There seemed to be considerable up and down fluctuation in the deaths in the City of New Orleans. For the week which closed June 13 there were 25 less deaths than the previous week, due largely to the small number of negroes who died, there being only 36 in the total of 108 for this week. Six infants in the city died, divided two white and four negro.

DR. ADOLPH NOHA

New Orleans

Dr. Adolph Noha, who practiced in New Orleans for more than fifty years, died at the age of 82 on May 29, 1942.

Dr. Noha originally obtained a degree in pharmacy from Tulane in 1888, and two years later obtained the degree of Doctor of Medicine. He practiced medicine in conjunction with his pharmacy which he sold in 1914 and thereafter devoted his time entirely to medicine. Dr. Noha was active for many years in the Orleans Parish Medical Society and the State Medical Society. In addition to his professional activities, he belonged to many fraternal and business organizations.

DR. ALFRED JACOBY

New Orleans

The many friends of Dr. Alfred Jacoby were greatly distressed to hear of his death very suddenly at the DeSoto Hotel on Saturday, June 13. Dr. Jacoby was well known to the medical profession in the City of New Orleans. He was an active attendant and participant in the Parish Medical Society, and had been a member of the State Society for many years, as well as belonging to the American Medical Association. Dr. Jacoby graduated from Tulane in 1902, and died at the age of 64, after practicing forty years in the City of New Orleans.

DR. HAROLD G. F. EDWARDS

Shreveport

Medical Department of Tulane University of Louisiana, New Orleans, 1911; member of the

American Roentgen Ray Society, Radiological Society of North America, Inc., American Radium Society and the American College of Radiology; fellow of the American College of Physicians; member of the American Board of Radiology, Inc.; served during World War I; visiting radiologist, T. E. Schumpert Memorial Sanitarium and the Tri-State Hospital; aged 53; died, May 2 of coronary occlusion.

DR. FLEATOR PALMER

Homer

Born 1885, graduated in 1912 from the University of Tennessee; a member of the Claiborne Parish Medical Society and Louisiana State Medical Society for many years.

BOOK REVIEWS

Clinical and Experimental Investigations of the Genital Functions and Their Hormonal Regulation: By Bernhard Zondek. Baltimore, Williams & Wilkins Co., 1941. Pp. 264. Price \$4.50.

The author devotes this monograph to a review of some of his investigations which have been conducted during the past four and a half years, at the Hebrew University in Jerusalem.

In an early chapter he discusses the effects of large protracted doses of estrogens upon the anterior pituitary, namely, the inhibition of secretion into the blood stream of the somatotrophic and gonadotropic factors of the anterior lobe of the pituitary. The experimental results of these studies are carefully presented, and of much interest are the effects noted upon the gonads and pituitary in both sexes.

In considering the fate of the sex hormones in the organism, it is pointed out that although the liver inactivates estrone, and the estradiol esters, such is not true in the case of stilbestrol. We may thus account for the relative toxicity of the latter in respect to estrone. In this chapter he reports an unidentified ferment found in potato juice, which inactivates stilbestrol as well as the biological estrogens. Although prolactin inactivates were found to be 50 per cent during the first hour after administration, the process and site remained undetermined, but was found not to be in the liver, spleen, or muscle tissue. The time interval between administration and effect of prolactin was found to be comparatively great, 24 to 27 hours, and remained the same regardless of the route of injection, i. e., intravenously, intracardially, or intraovarially. The various effects on the follicle differs with the dosage administered, which may be a lead in the direction of the muchly desired

knowledge of an "end point," in the administration of gonadotropes.

The clinical investigation of estrogen and progesterone administration during the menstrual cycle, and in cases of primary or secondary amenorrhea, are in accord with the results obtained by several workers in this country.

Studies of the glycogen content of the normal endometrium during the proliferative and secretory phases of the cycle, led to the establishment of a normal value. There was then found an appreciable decrease in this amount in the endometria of 18.4 per cent of the cases of sterility.

In conclusion the author disagrees with those who state that estrogen withdrawal produces uterine bleeding in the form of menstruation. He contends that a new substance is formed in the body from either estrone, or progesterone during the interval between the production and utilization of these products. This transformed substance is responsible for the bleeding.

This volume should be of interest not only to those in the research field, but also to those concerned with teaching, and practicing clinical endocrinology, because of the interesting theoretical discussion and the investigations reported pertaining to many unsolved endocrine problems, as well as the practical value of some of the clinical investigations.

WILLIAM H. BYRNE, M. D.

Diseases of Metabolism; Detailed Methods of Diagnosis and Treatment—A Text for the Practitioner: Edited by Garfield G. Duncan, M. D. Philadelphia, W. B. Saunders Company, 1942. Pp. 985. Illus. pl. Price, \$12.00.

Because of the present emphasis on the physiologic, biologic and chemical aspects of disease, the practitioner frequently finds himself in need of a basic review of the "theoretical" reasons for modern diagnosis and treatment. This is especially true for those conditions which have been loosely grouped together under the heading "Diseases of Metabolism."

Any practitioner who wishes such a general review of the usually encountered metabolic diseases will undoubtedly receive considerable help from reading the corresponding chapter in Duncan's "Diseases of Metabolism." For this purpose it is excellent because it bridges the gap between the experimental methods of analysis and the clinical implications.

Since it is always difficult to decide just what abnormal states ought to be considered diseases of metabolism, there may be some criticism of the conditions included within this text. For this reason, there are limited discussions on some disorders of the endocrine system and some of the hematopoietic apparatus. All things considered, however, it should be realized that Doctor Duncan has presented his material to the advantage of the physician. Fortunately, the style of most chapters is appealingly informal so that the reader obtains the impression of a bed-side consultation rather than a didactic presentation.

To anyone wishing to improve his understanding of the fundamentals upon which modern diagnosis and treatment of metabolic disorders are based, this book is heartily recommended.

SYDNEY JACOBS, M. D.

The Principles of Neurological Surgery: By Loyal Davis, M. S., M. D., Ph. D., D. Sc. (Hon.). 2d ed, rev. Philadelphia, Lea and Febiger, 1942. Pp. 503. Price, \$7.00.

If one loses sight of the author's object in writing this book, he may at once criticize it for being inadequate. It is not intended to be an exhaustive treatise on neurological problems and surgical procedures which can be used by an experienced surgeon. It is written from the long neglected standpoint of the general practitioner.

Practically every problem of neurosurgery is adequately discussed from the point of view of the practitioner in order that he may obtain a modern conception of the possibilities of neurosurgery and thereby give his patient further advice and aid him in seeking relief. The medical student as well as the general practitioner will find many important and practical points simply discussed in the first chapter, which is concerned with neurological diagnosis. Separate chapters are devoted to craniocerebral injuries, intracranial tumors, abscesses, spinal cord tumors, injuries of the spinal cord, surgical treatment of epileptic seizures, surgical relief of pain, and surgical treatment of essential hypertension.

This book will be a very worthwhile addition to the library of the general practitioner.

GUY L. ODOM, M. D.

Illustrations of Surgical Treatment; Instruments and Appliances: By E. L. Farquharson, Tutor in Clinical Surgery, Edinburgh. Baltimore, Wm. Wood; Williams and Wilkins Co., 1939. Pp. 338, illus. pl. Price, \$6.50.

This is a peculiar book. The first twenty pages concern infusions and transfusions, while the rest of the volume is on fractures. In the back are 52 plates with a variety of figures on each, including many instruments of only historical significance. The purpose of such an arrangement is understood only when its author's statement is read, that this volume conforms to the course in minor surgery given by the author.

The illustrations are excellent, as they so often are in fracture books put out by the English. Throughout the text, the versatility and ingenuity of the author are revealed. He shows a sound sense of fracture treatment. The nature of the book, however, is such that it cannot be recommended as a text, while its brevity precludes recommendation as a reference.

DANIEL M. KINGSLEY, M. D.

A Manual of Bandaging, Strapping and Splinting: By Augustus Thorndike, Jr. Philadelphia, Lea and Febiger, 1941. Pp. 144, illus. Price, \$1.50.

"... a neat dressing often bespeaks a good job beneath," states Elliott C. Cutler in a short introduction to this work. "This manual presents in elementary fashion the common types of bandages, strappings, and splints to the inexperienced medical student, pupil nurse, or orderly."

The contents are divided into six parts:

1. The Dry Sterile Dressing for Clean Wounds.
2. Septic Wound Dressing.
3. Sprains, Strains, and Contusions.
4. Dislocations and Emergency Splinting.
5. Transportation of Fractures.
6. The Use of Plaster of Paris and Similar Bandages in Splinting.

The author discusses the material almost entirely by means of pen and ink drawings (117 figures on 144 pages). These drawings were made by two third-year medical students. These are very good as far as they go, showing the more common forms of bandages, strappings, and splints. But for the medical student or interne, they are incomplete. Important details to make clear exactly those stages of procedure where confusion arises are not given. No doubt this manual accomplishes its purpose when used in conjunction with an instructor, as indeed it is used for second year students by its author. However, it does present an excellent nucleus for a future, larger edition.

DANIEL M. KINGSLEY, M. D.

The Clinical Application of the Rorschach Test:

By Ruth Bochner, M. A. and Florence Halpern, M. A. New York, Grune & Stratton, 1942. Pp. 220. Price, \$3.00.

The increasing recognition of the Rorschach Test as an important adjunct in the study of personality, and the fact that the method of administration and interpretation is very difficult to learn without special training, makes for the ready acceptance of a book which offers aid in mastering the essential technics.

There are, however, no short cuts to learning; and "The Clinical Application of the Rorschach Test" cannot be so considered. The fact that it reads smoothly and easily, that it has an extensive bibliography and interesting case material, does not compensate for the over-simplification of many statements—an over-simplification that renders it unsuitable as a text for beginners. Its greatest omissions are a list of normal detail interpretations, without which the beginner is unable to proceed; and a list of tables of good and poor form answers, which is indispensable to the beginner, endeavoring to differentiate between good and poor form responses.

Those familiar with the Rorschach Method, and able to detect the faults in a book such as this, might find "The Clinical Application of the Rorschach Test" an interesting addition to their library. But its use as a text for beginners should not be considered.

MARION MCKENZIE FONT, M. A.

Body Mechanics in Health and Disease: Goldthwait, Brown, Swain, Kuhns, Kerr, 3d ed. Philadelphia, Lippincott, 1941. Pp. 316, illus. Price, \$5.00.

This book is an unusual one. It brings together in one volume the knowledge and experience of a group of Boston orthopedists, as well as the medical background of a well-known internist. The attention of the medical profession is called to a neglected phase of diagnosis and treatment. Starting with a discussion of the anatomical bases, the authors go on to show how disturbances of various organs can result from the pressure effects or interference with their blood supply, following changes from the normal posture and position.

While the orthopedic aspects of this subject have been familiar for years, it has not been generally

realized that the organs themselves likewise suffer from the same forces that show up externally in the patient's posture. Case reports of serious conditions such as enlarged and failing hearts and of diabetes mellitus, cured through postural treatment alone, are among the startling features of this volume. A discussion of all the larger organs is given, with case reports of physiological changes that follow poor posture. Dr. Kerr contributes a chapter on the use of the Kerr-Lagen belt for cardiac conditions resulting from postural causes.

While the information presented is thought-provoking, the discussion is often elementary for a medical man, and the illustrations, especially of the x-rays, quite poor. The chapters on treatment also seem to be inadequate.

Nevertheless, the standing and experience of the authors, together with the unusual subject matter presented, combine to make this book a valuable contribution.

DANIEL M. KINGSLEY, M. D.

Textbook of Clinical Parasitology including Laboratory Identification and Technic: By David L. Belding, M. D. New York and London, D. Appleton-Century Co., 1942. Pp. xxi+90, figs. 27 colored plates I-IV. Price, \$8.50.

This volume, which is an outgrowth of the author's planographed *Manual of Human Parasitology* (1933, 1936), is a comprehensive textbook on the animal parasites of the human body. It is divided into seven sections, embracing the following subjects in sequence: I, General Parasitology, including chapters on Parasites and Parasitism, The Pathology of Parasitic Infections, the Immunity of Parasitic Infections, The Transmission of Parasitic Diseases, The Diagnosis of Parasitic Diseases, and The Treatment and Prevention of Parasitic Diseases; II, The Protozoa; III, The Nematelminthes or Roundworms; IV, The Cestodea or Tapeworms; V, The Trematoda or Flukes; VI, Arthropoda, and VII, Technical Methods for the Diagnosis and Treatment of Parasitic Infections. The book is abundantly provided with tables, diagrams, line and half-tone illustrations. Both text and illustrations show that the author has painstakingly assembled the best of the contributions made by parasitologists and clinicians in the field of human parasitology.

The author's meticulous care to provide the reader with a full comprehension of the morphology and life cycles of the etiologic agents of parasitic infections has unfortunately not been balanced by critical information and judgment concerning these organisms. This is particularly evident in several of the synoptic figures. Fig. 104 (p. 339), illus-

trating the differences among microfilariae, fails to show *clearly* or *accurately* the anatomical landmarks, especially at the posterior end of the embryos. Fig. 129A (p. 392), referred to as the mature proglottid of the pork tapeworm (*Taenia solium*), omits the accessory ovarian lobule, thus making it diagrammatically that of *T. saginata*. All four of the eggs in Fig. 130 (p. 394) are incorrect representations, but this is especially true of the egg of *Diphyllbothrium latum*, in which the enclosed organism is drawn with the hooklets of a mature hexacanth embryo but lacks the ciliated epithelium, whereas the text immediately above states correctly that "the fully developed embryo is ciliated," and Fig. 137B (p. 406), which also represents the mature egg, is correctly drawn. The synoptic life cycle diagrams in Fig. 164 (p. 465) have borrowed certain illustrations from the reviewer's publication and have interpolated them into positions in which they are misleading. Fig. 239 (p. 686) has borrowed nine of the sixteen unit drawings from the reviewer's illustrations (Fig. 234 in Craig and Faust's *Clinical Parasitology*, 2nd ed. 1940), without crediting. The map on p. 192 (Fig. 52), is misleading with reference to the geographical distributors of malaria in North America, while those maps showing the distribution in the Western Hemisphere of the lung fluke, *Paragonimus westermani* (p. 489, Fig. 171), as well as Manson's blood fluke (p. 554, Fig. 196), do not reflect critical present-day knowledge.

The use of the term "alexin-fixative test," in place of "complement-fixation test," may possibly be technically accurate but seems strained and pedantic (*vide*, pp. 58, 96, 164, 165, 212, etc.). In considering the "precipitative test" (pp. 56, 806), no distinction is made between specific *precipitin* reactions and the *precipitation* phenomenon resulting from non-specific excess globulin in the blood serum.

In the recommendations for specific treatment of parasitic infections management and contraindications are almost consistently omitted. For example, in the treatment of Gambian trypanosomiasis (pp. 156-157) no mention is made of the need to stop trypanamide treatment when acute ophthalmic disturbances appear, and in the treatment of hookworm disease (p. 298), ascariasis (p. 324) and fish tapeworm infection (p. 408) there is no reference to the rationale of pre- and post-treatment purgation, both to reduce the toxicity of the treatment and for greater efficiency. While gentian violet is recommended in strongyloidiasis (p. 279) and oxyuriasis (pp. 210-311), the desirable type of coating is not indicated. In the chapter on chemotherapeutics (pp. 820-843) the statement is made (p. 829) that atabrine is "plasmocidal for all but sexual forms of *P. falciparum*," whereas no drug is known to be specific for the sporozoites or the exoerythrocytic stage of the incubation period.

Cross references are not easy to look up. As one example, on page 97 reference is made to "Sec. VII, XIII, 12." Why not "page 826, topic 12"?

The above-cited examples and many similar ones suggest the author's lack of intimate experience with much of the subject matter. On the other hand, it is evident that he has conscientiously combed the literature for information and has succeeded in producing a creditable text. Moreover it is difficult for the reviewer to criticize this volume, since the author has made such generous use of the reviewer's publications and illustrations.

Belding's *Textbook of Clinical Parasitology* is clearly printed, of pleasing format, remarkably free of typographical errors and is both substantially and handsomely bound. Some of the illustrations are good, others are pleasing to the eye but are inaccurate. Several of the half-tones are worn and do not justify the space allotted to them. The color plates add to the wealth of illustration. The contents of this volume more accurately belong in a "Human Parasitology" than in a "Clinical Parasitology."

ERNEST CARROLL FAUST, Ph. D.

Manual of Pharmacology and its Applications to Therapeutics and Toxicology: By Torald Sollmann, M. D. 6th ed. reset. Philadelphia, W. B. Saunders Co., 1942. Pp. 1298. Price, \$8.75.

This new, entirely reset, edition of the time-tested *Manual of Pharmacology* varies appreciably from the preceding one. The book has been brought up to date in all fields of Pharmacology and Toxicology to an admirable degree. Most of the text has been rewritten and new chapters have been added. Among the chapters that had to be omitted in order to keep the book from becoming unmanageable is the one on specific sera and vaccines, an omission likely to be deplored by many readers. The bibliography (104 pages) consists of publications after 1920 only; for references up to that date the reader is referred to the Fifth Edition.

A book of the dimensions of Sollmann's *Manual* cannot be reviewed satisfactorily and justly only a few weeks after its publication. Its merits and demerits will manifest themselves clearly only after extensive use rather than superficial reading. Whereas it is not likely to be used much in the undergraduates teaching of pharmacology, its outstanding value as a manual and book for reference seems indisputable. The only weakness this reviewer has been able to note, lies in the organization of the material in some of the less important chapters, as for instance the ones in war gases or on venoms. There are some minor errors and in-

consistencies. The use, for instance, of the metric system alone, or the consistent use of metric system with the apothecaries' system stated in parentheses throughout the book would have been preferable to the often promiscuous use of either system.

GERHARD KATZ, M. D.

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D., James R. Eckman, A. B. and M. Katherine Smith, B. A., Volume XXXIII, 1941.

Oxford University Press, New York: Vascular Sclerosis, by Eli Moschcowitz, A. B., M. D. The Sulfonamide Compounds in the Treatment of Infections, by Maurice A. Schnitker, M. D.

The Williams & Wilkins Company, Baltimore: The Medical Applications of the Short Wave Current, by William Bierman, M. D. Urology in War, by Charles Y. Bidgood, Lt. Commdr. (MC) U. S. N. R.

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TYPHUS FEVER IN CHARITY HOSPITAL*

CHENEY JOSEPH, M. D.†
NEW ORLEANS

Typhus fever undoubtedly existed for many hundreds of years before 1536 but not until then were the first cases recorded in medical literature. From that time until 1837, when William Wood Gerhard of Philadelphia differentiated between typhoid and typhus, the two diseases were considered to be identical. Following this differentiation it was not until 1906 that it was shown that the blood of typhus patients in the acute stage is infectious when injected into susceptibles, and three years later the human body louse was proved to be the natural transmitting agent. The following year, 1910, Howard Taylor Ricketts, distinguished American scientist who had been working in Mexico with tarbardillo, the Mexican typhus, published in the Journal of the American Medical Association a description of the minute intracellular bodies which he had seen in the endothelial cells of these patients, and thought were inclusion bodies characteristic of typhus. In 1913 a German, von Prowazek confirmed Ricketts' work and agreed that these were characteristic inclusion bodies, and it was not until three years later that Rocha Lima recognized and proved the so-called inclusion bodies of Ricketts as the causative micro-organism of typhus. In honor of Ricketts and von Prowazek, both of whom had died of typhus while studying the

disease, Rocha Lima gave to these small intracellular organisms the genus name *Rickettsia*, and the species name *Prowazekia*, thus *Rickettsia prowazeki*. Just before Rocha Lima published his discovery, two Austrians, Weil and Felix, searching in Serbia for the etiologic agent of typhus, isolated from the urine of one of their patients *Bacillus proteus vulgaris* and found that this patient's blood serum agglutinated a suspension of these bacilli. Naturally they thought this was the pathogen of typhus and continued to investigate along these lines. By the time Rocha Lima's *Rickettsia* was established as the true pathogen they had developed an agglutination reaction which has been ever since of great value as a positive laboratory confirmation of the clinical diagnosis of typhus, the Weil-Felix reaction.

In 1913 Fraenckel described the pathology of typhus as being confined to the blood vessels with endothelial swelling and fragmentation, formation of thrombi in these vessels, perivascular round cell infiltration, and rupture of small vessels beyond the points of complete thrombotic occlusion with hemorrhage into the tissue, the vessels of the skin and brain being particularly involved in this pathological process. In 1919-20 the American Typhus Commission to Serbia further described the pathology and extensively studied the disease from all standpoints and it is from the publications of this Commission that much of the present day knowledge of typhus has come.

In 1898, N. E. Brill, a Polish immigrant physician practicing in New York, observed sporadic cases of what he considered to be a mild form of the typhus he had seen in Poland. In 1910 he published a description

*Read before the Orleans Parish Medical Society, April 13, 1942.

†From the Department of Medicine, School of Medicine, Tulane University of Louisiana.

of a collection of these cases and from then to 1926, cases of typhus seen in the different states were considered as merely cases of European typhus of a mild nature and were known as Brill's disease. In 1926 K. F. Maxcy of the United States Public Health Service showed that the two were epidemiologically unlike and proved that the body louse could not be the vector of this then called Brill's disease. He suggested the rat as a reservoir of the disease and some other insect than the louse as the transmitter. In 1931, R. E. Dyer, of the United States Public Health Service, further separated the louse-borne typhus of Europe from the sporadic typhus of the southeastern United States by proving the rat flea to be the vector and the rat the reservoir host of these endemic cases of typhus and because of this relationship gave the name 'murine' to this form of the disease. Since then it has been accepted that the two forms of typhus, though similar, vary greatly in many respects and typhus has been definitely divided into two types, the epidemic and the endemic, or murine.

Epidemic typhus is the type which is raging in Europe now. It is transmitted from one patient to another by the host specific body louse, is a very severe disease with high mortality (as great as 70 per cent or more in some outbreaks), occurs as the name describes in epidemics, and is especially prevalent where there is human crowding, cold, hunger and general unhygienic conditions. It occurs principally in winter and early spring where the cold prevents frequent bathing and change of clothing, promoting louse infestation, and other than in time of war or other human catastrophe is found almost exclusively in the lower economic strata.

Endemic typhus, though a much milder disease, is caused by the same *Rickettsia prowazeki* but of a different strain, these strains being morphologically and immunologically identical but able to be differentiated by injection into laboratory animals. The endemic typhus strain in these animals is more virulent and incites a greater tissue

reaction. Endemic typhus is primarily a disease of rats, which it affects little or not at all, and is transmitted only incidentally from rat to man by the tropical rat flea, never as far as is known, from one human to another. It is especially prevalent in late summer and early fall and tends to occur sporadically in those who are exposed to rats and their fleas, either at home or at work. For this reason it can and does occur in all classes of patients and not as the epidemic, only in the lower economic strata.

There is no epidemic typhus in the United States today but endemic typhus is present and is becoming more widespread and frequent in occurrence. This is the form we are seeing at Charity hospital and all that follows has to do only with this endemic type of typhus unless epidemic is specifically mentioned.

Though mild typhus had been known to be present for many years in Georgia and Alabama to the east of Louisiana, and in Texas to the west, it was not described here until 1929. W. C. Rucker reported the first case that year and a few months later John H. Musser recognized and reported the first case to be observed at Charity Hospital. From then until 1939 there was some increase in the reported instance almost every year but only 130 cases were reported in Louisiana during that ten year period. In 1939 a sharp increase in the incidence occurred, 117 cases being reported. In 1940 there were 118 cases, and last year a new high incidence of 194 cases reported to the Louisiana State Board of Health. During this same year, 1941, there were almost 3,000 cases in the United States and of these 94 per cent were reported from the coastal southeastern United States and Texas. The term coastal southeastern United States is here used to include those states from North Carolina south along the Atlantic coast through Florida and west along the Gulf of Mexico through Louisiana and including Texas. From these states, as stated, 94 per cent of last year's typhus was reported and in previous years a similar high percentage of the total re-

ported in the United States has come from this group.

Of the 194 cases in Louisiana, 44 were observed at Charity Hospital last year. Although 44 is a small series to analyze for characteristics of a disease so prevalent as endemic typhus, the fact that the findings in these cases so closely coincide with those described in the literature proves that it is murine typhus which we have been seeing and suggests that the few discrepancies these cases bear to the described endemic typhus may be worth mentioning.

In this series there were 24 male and 20 female, 33 white and 11 colored patients, and the age, though it ranged from seven to 62, averaged 33 years and all but seven of our patients were between the ages of 15 and 50. Thirty-two were from urban and 12 from rural environments. Between July 15 and October 15, 27 cases were observed, more than 60 per cent of the total. Because so many of our patients were housewives or others who had no special occupational environment, the home environment was of more importance than the occupational in this series. However, of those who did have definite occupations there was a predominance of farmers, trappers, foodstore workers, fishermen, bakers and shipyard workers. In nearly every case there was a definite history of having rats in the home or working environment, or both. Twelve had actually handled rats with bare hands, three others had handled mice, seven gave histories of having had flea bites, and two had been bitten by other insects prior to the onset of the illness. The incubation period could not be arrived at in this series but is given in the literature as five to twenty days, with an average of twelve.

SYMPTOMATOLOGY

The clinical symptomatology was fairly constant. The onset was sudden in 75 per cent of patients but prodromata ranging from two to nine days were described. Shaking chills at the onset were described by nearly half, and eleven more had chills within the first 48 hours of illness, making a total of 32 of the 44 who had true shaking

chills early in the course of their disease. Of these, 24 had multiple chills and eleven had chills persisting past the fifth day of illness. Only six had no chills in the entire course, and four others only chilliness. Headache was a primary symptom in thirty, was described as being very severe or splitting, was not relieved by aspirin or any of the other ordinary analgesics, and was the most constant of symptoms in our cases, all but one patient complaining of this at some time or other. Other aches and pains were also quite prominent, these being in order of frequency, backache, chest pain, neck pain, generalized muscle and joint pain and abdominal pain. Every case gave a history of some severe pain as part of the principal symptomatology, either at the onset or early in the course, and nearly all had severe pain while in the hospital. Weakness was fairly marked in 24 but in none of these was prostration approached. Sixteen were slightly weak or not at all. Gastrointestinal symptoms, particularly nausea and vomiting, were present in less than half, all of these early in the disease. Only one patient had diarrhea. Respiratory symptoms were not present as often or as prominently as has usually been reported. However, such symptoms as cough, sore throat, chest pain, and coryza were present sufficiently often to have 21 of the patients' chests x-rayed.

CLINICAL SIGNS

Most of the patients were at home between five and eight days before seeking hospital attention. A few came in before the fifth day and ten after the eighth day. Fever was present in all. The type of temperature curve which these patients presented depended upon the vigor and nature of the antipyretic measures used, and the number and severity of chills. In those few patients who had no chills after being hospitalized and who were given no temperature-reducing measures, the temperature was constantly elevated, varying not much more than one degree from maximum to minimum in any 24 hour period before the defervescence. The fever lasted from 12 to 25 days in our cases but practically all were

terminated between the thirteenth and eighteenth days. The fever disappeared by rapid lysis in nearly every case.

In 30 of the 33 white patients a rash was observed. In only one of the 11 colored patients was there a rash, and this patient had very light skin. The rash appeared before the end of the first week in most, as early as the fourth day in a few. It was red or rose colored in all, appeared on the abdomen, chest, back, upper and lower extremities, in a very few cases was seen on the soles and palms, and in one case on the neck. There was no rash on the face in any of these patients. It faded on pressure in nearly every case, was maculo-erythematous in the majority, but maculo-papular and palpable in ten. Only two had hemorrhagic spots in the skin and these were not large. The rash did not appear in crops, had no particular form, was very profuse in some and more sparse in others, but was always present in greater numbers of spots than the rose spots of typhoid fever are usually. This rash lasted a variable period of time, had disappeared by the twelfth day in all but one, and in some had vanished as early as the eighth day.

The neurologic signs were most conspicuous by their absence. This has been noted many times in reports on endemic typhus but in the epidemic typhus neurologic signs and symptoms are especially marked. The coma usually seen in these epidemic cases is what has given the disease the name typhus, which is from the Greek and means "like a cloud," referring to the "cloudy" mental state. Only two of the patients were comatose, one of these deeply so for three days, one was excited to a state approaching delirium, two were stuporous, and one had a stiff neck. Otherwise these patients were no more affected mentally or neurologically than the degree of fever would warrant.

The respiratory signs were even less prominent than the respiratory symptoms. Subcrepitant rales were heard over one or both bases in six but there was clinically detectable no consolidation, no cyanosis, no pleural effusion and the respiratory rate

was not unduly increased, nor was there any other sign of respiratory disease. Of the 24 x-rayed, four showed some evidence of bronchopneumonia; the others were completely negative.

Signs of cardiovascular involvement were negligible. There was tachycardia proportional to the degree of fever in all, no clinically detectable diastolic pulse, no sign of right or left heart failure, no venous or arterial thrombosis, no fall in blood pressure or any other evidence of peripheral vascular collapse.

There was distention in one, tenderness on abdominal palpation in another and in nine the spleen was definitely palpable. In three others the spleen was questionably palpable, making a total of 12 out of 44, or about 25 per cent with palpable spleens. The liver was not palpable in any and only one was jaundiced, this one but slightly. When the spleen was palpable it was so early in the disease and remained palpable throughout.

Conjunctival injection was present in about half but was nothing like so marked as is the conjunctival injection in Weil's disease.

LABORATORY TESTS

Most of these cases were fevers of undetermined origin early in their hospital course and as fevers of undetermined origin were subjected to a large number of laboratory tests. Blood cultures, urine and stool cultures and many blood smear examinations were done and none of these were positive for any organism. There was febrile albuminuria in five, this disappearing in all of these as the temperature became lower. Five had blood urea nitrogen determinations and all of these were within normal. Two had spinal surveys, all findings within normal. Two of them had positive Klein and Kolmer tests during their febrile period which became negative and remained negative after the temperature was normal. There was a definite leukopenia early in the disease, this being constant up to the sixth day. After that day the blood count in most returned to within normal limits, a relative leukopenia, and late in the disease

a polymorphonuclear neutrophilic leukocytosis developed in about half of the cases.

Up to the seventh day the few blood serum agglutination tests which were done using *Bacillus proteus* OX19 showed no agglutination of this organism. On the seventh day one of seven done was positive, on the eighth day six of 11 were positive, on the ninth day one of two done was positive, on the tenth day eleven of twelve done were positive and after the tenth day all that were done were positive. The macroscopic agglutination test was done, starting with blood serum dilutions of 1:80 and going through dilutions of 1:640. In all cases after becoming positive, the titer increased throughout the hospital stay or maintained its highest attained level.

DIFFERENTIAL DIAGNOSIS

The diagnosis before the agglutination became positive was principally concerned with differentiation of typhoid from typhus fever. Malaria was the next most frequently considered diagnosis; influenza, bronchopneumonia and undulant fever following next in that order. Tularemia, amebic liver abscess, Weil's disease, drug rash, pyelonephritis, infectious mononucleosis, meningitis, malignancy with cerebral metastasis and craniocerebral injury were each mentioned prominently in the differential diagnosis of one of these cases. Dengue, relapsing fever, smallpox nor spotted fever, were mentioned in the differential diagnosis of any of these patients because these diseases are not seen at all or are quite uncommon in Louisiana. In places where both these and typhus occur the differential would undoubtedly be very difficult early in the course.

COURSE

The average hospital stay in this group was 13½ days, an average of 21 days elapsing between the onset at home and the day of hospital discharge. The course of the rash and the fever have been described. The headache and other aches and pains persisted in many cases to the twelfth day but in all, these symptoms had disappeared before the temperature became normal.

TREATMENT

The treatment was almost purely symptomatic, maintenance of fluid balance, strict bed rest, and giving a light nourishing diet being the principal parts. Codeine and aspirin were used very freely for relief of pain and reduction of temperature. Alcohol and cold water sponges, ice caps and other temperature-reducing measures were also used frequently. All of the common sulfonamides, except sulfadiazine, were used in full doses in one or more of the patients before the diagnosis was established, and with no beneficial effects at all. Quinine sulfate, grains 10 t.i.d., was given to three patients and this drug did effect a reduction of temperature for two days after it was given in all three of these patients but thereafter the temperature resumed its former high level though the doses were continued.

COMPLICATIONS

The complications were very few. One patient developed bronchopneumonia after he had been free of fever for four days. This was suspected of being a Rickettsial pneumonia but this was not proved. Only one of these patients developed a bed sore, a small one which healed readily. Other than these there were no complications worthy of mention.

MORTALITY

In this small series there were no deaths, and I have been able to find no record in Charity Hospital of a death from typhus fever in the past three years. The mortality from all the cases which have been reported in Louisiana since 1929 is 4.4 per cent of the total incidence. In Georgia, where large numbers of cases are very accurately tabulated every year, the mortality from typhus has usually been from 4 to 5 per cent. The mortality from typhus in the United States as a whole, however, is usually given as about 1 per cent. It may be of interest to report here that in 1941 there were 86 cases of typhoid at Charity Hospital and that of these 13 died, showing that despite the increase in typhus, typhoid is nearly twice as common here and is certainly very much more dangerous.

SEQUELA

Thirty of 44 typhus patients in 1941 have returned for examination from three to 13 months after discharge. In this group the instance of sequelae has been very little. Only one has noticed any decreased tolerance to cold; four noticed some increased shortness of breath on exertion since recovery; three had edema of one or both feet and ankles after hospital discharge but this was of short duration and none had any swelling at the time of examination. The duration of weakness during convalescence varied. Five of the patients were able to go right home from hospital discharge and resume their usual routine but the other 25 required from two to more than six weeks to regain strength and some had not completely regained their former endurance after four months. None had ever had any disease which might even be suspected of having been typhus and there was no evidence that any of these patients had transmitted the disease to anyone else. Four of this group reported other cases in their neighborhood, either before or since they had typhus. Four others came from the same community and reported that two additional cases had occurred there. (This was from a small settlement in Lafourche Parish and these patients were trappers and their families.)

All of those who returned were tested for agglutination of *Bacillus proteus* OX19 and in only ten did the blood serum agglutinate these bacilli when diluted 1:80 or more. Of these ten, five agglutinated in titers of 1:160 and one of these five to 1:320. All of this last group of five had recovered from typhus six months or more before these agglutinations were done. Usually, however, the demonstrable humoral immunity was found to have disappeared very quickly and in five patients who had typhus in 1939 and five who had the disease in 1940, the blood serum in 1942 agglutinated *Bacillus proteus* OX19 in no titer above 1:20 and only one agglutinated in this very low dilution. This does not indicate at all that the having of the disease and recovery has conferred no immunity. Despite the

fact that it can not be demonstrated by agglutination reaction, the immunity has been found in all cases to be almost complete, few cases of subsequent infection ever having been reported.

PREVENTION

The prevention of endemic typhus has to do with rat control. In the bibliography is a reference to the excellent lecture of R. E. Dyer who discussed this control thoroughly in the Charles Franklin Craig lecture for 1941. According to recent literature the vaccine, which is available to those who need to be so protected, promises to be of great immunizing value but at present it is neither necessary nor advisable to vaccinate against endemic typhus. Those who may be exposed to epidemic typhus present a different problem and should be immunized by vaccination and this immunity stimulated every four to six months by another injection of killed *Rickettsiae prowazeki*.

SUMMARY

1. Endemic or murine typhus is spreading and increasing in incidence in the United States, particularly in the southern United States, and of a special interest to us, in Louisiana.

2. The disease, as has been seen here, corresponds closely to the descriptions of endemic typhus in the literature. Our cases have been characterized by sudden onset, chills, high fever, weakness, headache and other aches and pains, signs and symptoms of respiratory infection, by the appearance just before the end of the first week of a maculo-erythematous rash which fades on pressure, by splenomegaly in about 25 per cent of the cases, by a course of approximately two to two and a half weeks of fever terminated by rapid lysis, and followed by convalescence of two to six weeks or more before strength is regained.

3. There is a leukopenia early in the disease and up to near the end of the first week. Then the blood count becomes within normal, which with the elevated temperature may be considered a relative leukopenia, and it is only later in the disease that

a leukocytosis develops, and this in only a small percentage of cases is marked.

4. In all of these patients there developed blood serum agglutination of suspensions of *Bacillus proteus* OX19. This agglutination appeared early in the second week and in all cases was present in serum dilutions of 1:320 or more. This titer either increased after it appeared or maintained its highest attained level throughout hospital stay but disappeared within a few months after recovery.

5. The disease in our series occurred relatively more frequently in females and in colored patients than has usually been reported.

6. A history of contact with rats was obtained in nearly all patients.

7. The disease appeared most often in urban environments and in late summer and early fall.

8. Although there is no specific treatment, the mortality is very low; no deaths occurred in our small series, and the complications and sequelae were negligible. Sulfonamides and quinine were used but with no beneficial effect.

9. There is a vaccine for immunization but as far as endemic typhus is concerned prevention has to do entirely with rat control.

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DISCUSSION

Dr. John H. Musser (New Orleans): There are three comments I would like to make on this very interesting presentation by Dr. Joseph. First, I would like to say that I would like to congratulate the author on his study as well as Dr. Michaels who presented the previous paper. I wish that more of the young men connected with Charity Hospital would make use of the tremendous reservoir of material available to them. After all the average practitioner of medicine will see a case of hematoma of the vulva about once in every ten years or a patient with typhus fever but right here in the Charity Hospital there is this almost unbelievable mass of material which largely, on account of the question of time it takes to analyze a large series of cases, is untouched.

My next comment has to do with rat control. I believe that the effort that Dr. Whitney is making here in the City of New Orleans to help eradicate rats will be of tremendous value to us as citizens. I do not know your particular neighborhoods but I know up in the district in which I live the rats have been very prolific and numerous and are man-size rats. If they can be eradicated, or at least materially reduced in number, I think it will be a distinct public health advance.

The last comment I want to make has to do with the physical signs. I was quite surprised to note that only about half of Dr. Joseph's cases had conjunctival involvement. To my mind that is the most outstanding suggestive physical sign that we have irrespective, of course, of rash, because when the rash appears the diagnosis becomes comparatively easy in white individuals but I imagine—I have not seen colored people with it—rather difficult with the colored population. These people have a florid appearance and added to that, marked conjunctival injection.

Dr. Edgar Hull (New Orleans): I have no discussion except to state that those of us here have been fortunate to hear Dr. Joseph's discussion on the clinical aspects of typhus fever and I think we should urge those not here to read his

paper when it is published. This is a description of the disease not as Dr. Joseph has read about it but as he has seen it. I think it is a very valuable contribution.

Dr. Cheney C. Joseph (In closing): I have nothing to add but to thank Dr. Musser for bringing out the fact that conjunctival injection has been more frequently observed in most cases than I have reported in this series. Perhaps I have used as criteria for reporting injection of the conjunctiva a more marked injection than has been generally observed in our cases. I have read that this is a quite helpful diagnostic sign.

CEPHALIN CHOLESTEROL FLOCCULATION AS A LIVER FUNCTION TEST

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In 1938 Hanger first proposed the addition of an emulsion of cephalin cholesterol to blood serum as a means of estimating the hepatic function. Although the principle of the resulting flocculation in positive cases was not definitely known, it is now thought by Hanger¹ to depend upon the capacity of an altered globulin constituent of the serum to become affixed to the colloidal elements of the emulsion.

Since the introduction of the test, various investigators^{2, 3} have reported studies of its efficiency. The report herewith presented consists of a study of the cephalin cholesterol in 100 cases, with a comparison of this test with that of Takata-Ara.

TECHNIC CEPHALIN-CHOLESTEROL TEST (HANGER)¹

A stock solution is prepared by dissolving 100 mg. of sheep brain cephalin and 500 mg. of cholesterol in 8 c.c. of ether (Squibb's anesthesia). This solution can be kept many months without deterioration in a well stoppered container. An emulsion of a cephalin cholesterol complex may be prepared by adding (slowly and with stirring) 1 c.c. of the stock ether solution to 35 c.c. freshly distilled water warmed to 65° to 70° C. and then heating slowly to

boiling. The mixture is allowed to simmer until the final volume is reduced to 30 c.c. During the heating, all coarse granular clumps are dispersed to a stable, milky, translucent emulsion and all traces of ether are driven off. After cooling to room temperature the preparation is ready for testing, which consists of adding 1 c.c. of the emulsion to a test tube (preferably a centrifuge tube) containing 0.2 c.c. of the patient's serum diluted with 4 c.c. of normal (0.85 per cent) saline. After thorough shaking and stoppering with cotton, the tube is allowed to stand undisturbed at room temperature and notation is made at the end of 24 and 48 hours as to the amount of flocculation and precipitation that has taken place. With normal human sera the emulsion remains as a stable homogenous suspension but with sera from patients with diffuse hepatitis the lipid material tends to flocculate and precipitate to the bottom of the tube. A++++ reaction indicates a complete precipitation leaving the supernatant liquid water clear. Gradations of the reaction between negative and +++++ are designated in terms of +, ++, and +++. No test should be regarded as negative until 48 hours have elapsed without flocculation.

Few precautions are necessary. The serum should preferably be fresh or preserved at ice box temperature. Plasma also may be used but the presence of various anticoagulants creates uncontrollable uncertainties. The lipid emulsion, if properly prepared, remains stable for many days but comparable results can be expected only if it is prepared freshly on the day it is to be used. It is important to measure accurately the various ingredients and to employ only carefully washed glass ware. Traces of heavy materials or strong acids may give rise to erroneous positive flocculation.

TAKATA-ARA TEST (CRANE REPORTED BY KIRK)⁴

One cubic centimeter of a 0.9 per cent solution of sodium chloride was pipetted into each of six small test tubes (agglutination tubes are very satisfactory). One cubic centimeter of the patient's serum was

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added to the first tube. One cubic centimeter of the patient's serum and saline solution well mixed was pipetted into tube 2, and the procedure continued until dilutions from 1:2 to 1:64 were obtained. The final cubic centimeter was thrown away. To each tube 0.25 c.c. of a 10 per cent solution of sodium carbonate was added, followed by 0.15 c.c. of 0.5 per cent mercury bichloride. The tubes were then shaken and were read in five minutes and again in twenty-four hours. A pearly flocculent precipitate filling at least one fourth of any tube and a definite precipitate in any of the first four tubes is considered strongly positive. All other types of precipitate or lesser degree of the pearly flocculent precipitate are considered negative.

MATERIAL

The serum tested in this report was obtained from patients in the Tulane Service of Charity Hospital, patients in the Southern Baptist Hospital, and from Junior medical students in Tulane University. The latter were considered to have normal liver function, and their serum used as a normal control.

INTERPRETATION

In an interpretation of the above results we have followed the suggestion of Hanger and considered 1+ reactions as negative, inasmuch as 13.8 per cent of the normal controls showed this type of reaction. Of the three positive cases occurring in the normal controls two gave a 2+, and one, a 4+ reaction. These three positive reactions could not be explained by any clinical symptoms or physical findings referable to hepatic disorders. However, as the Takata-Ara test in all three was also positive, they warrant further investigation.

The miscellaneous and undiagnosed groups were chosen at random from cases showing no evidence of hepatic disorder.

In Groups II and III not all of the cases (see table 1) clinically showing liver damage gave positive cephalin cholesterol flocculations. There was one of hepatic cirrhosis proved at autopsy which gave only a 1+ reaction.

Noticeably three cases receiving sulfona-

RESULTS
TABLE 1

CONDITION	NO. OF CASES	Neg. TAKATA-ARA	Pos. TAKATA-ARA	(Neg. + 1+) CEPHALIN-CHOLESTEROL	(2+ 3+ 4+) CEPHALIN-CHOLESTEROL
1. No Liver Disease					
Normal	29	26	3	26	3
Cholecystitis	4	2	2	3	1
Toxic thyroid	1	1	1	1	
Miscellaneous	20	18	2	18	2
Undiagnosed	13	7	6	13	
	67	53	14	61	6
2. Intrinsic Liver Disease					
Catarrhal jaundice	3	2	1	1	2
CPC of liver (H.C.V.D.)	8	7	1	7	1
Cirrhosis	6	2	4	4	2
Toxic (drugs) 1. Arsenic	1	1		1	
2. Sulfonamide drugs	3	2	1		3
Weil's disease	2	2		2	
Myelogenous leukemia	1	1			1
Pre-eclamptic	1	1			1
	25	18	7	15	10
3. Obstructive Jaundice					
Ca. head of pancreas	2	2		2	
Cholelithiasis	1		1		1
	3	2	1	2	1
4. Syphilis					
Latent	3	3		2	1
CNS	2	1		1	1
	5	4		3	2

mide drugs in toxic doses gave strongly positive flocculation in each instance.

Also of significance is the absence of a positive cephalin cholesterol test in two cases of pancreatic carcinoma with jaundice. Apparently the duration of the obstruction was not prolonged sufficiently to cause liver damage. On the other hand, the one case of cholelithiasis which had had jaundice for six weeks gave a strong flocculation.

In Group IV consisting of three cases of latent and two of central nervous system syphilis, two strongly positive and three negative reactions were obtained.

CONCLUSIONS

1. In the 100 cases presented, the cephalin cholesterol test definitely agrees with the Takata-Ara in 90 per cent of the 29 normal controls and in a majority of the remaining cases.

2. Neither test is influenced by serum containing bile or having positive serology for syphilis.

3. The cephalin cholesterol test is a simple procedure provided the cephalin cholesterol reagent may be obtained. (In our series this reagent was donated through the courtesy of the Digestive Ferments Company, Detroit, Michigan.)

4. In our experience the cephalin cholesterol test for liver function is definitely of value, especially in jaundiced cases. One must keep in mind, however, that like other liver function tests it is not infallible.

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PRIMARY THROMBOSIS OF THE AXILLARY VEIN*

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It has long been a well-known and somewhat enigmatic fact that whereas post-operative or post-puerperal thrombosis occurs almost exclusively in the lower extremities, thrombosis associated with strain or effort almost invariably involves the upper extremities. It is perhaps equally significant that while the former may be considered relatively common, the latter is commensurably rare. This is clearly demon-

strated by the fact since its original description by vonSchrötter,⁸⁴ in 1884, a careful survey of the literature reveals approximately 150 cases reported by almost as many authors. In this survey the paucity of the American literature on this subject prior to 1934 when Matas⁵⁸ published his characteristically comprehensive presentation, was a striking observation. With pardonable pride attention is directed to the fact that since then the overwhelming majority of reports have been by American authors.¹⁰¹

It is deemed inopportune to attempt here a detailed discussion of this subject since little factual knowledge has been added since Matas' exhaustive consideration.⁵⁸ However, it may be fitting to review briefly the essential features of the condition and to emphasize the diagnostic value of phlebography and certain therapeutic measures. Moreover, it is considered desirable to record the unusual experience of five cases in less than five years.

Primary axillary thrombosis occurs most commonly in the male and in the right arm and when the left side is involved it is usually in left-handed patients or those having exerted an unusual strain on this arm. Curiously enough while only a few cases^{15, 17, 25, 27, 82, 95, 99} have been recorded in females, in the authors' series of five cases three were females. Whereas rarely it may develop spontaneously like a bolt out of the blue and without rhyme or reason, the patient finding his arm stiff and swollen on awaking,^{51, 52, 55, 56, 71, 95} usually the condition is observed in "young, robust, muscular individuals" and follows some type of sudden or unusual effort or strain. It would seem that these forms of preceding muscular exertions vary considerably from sudden severe violent efforts to simple "banal" acts. Accordingly in some of the reported cases, the condition has followed such actions as controlling a wild horse,⁸³ moving heavy furniture,⁶ pulling tents from trees,⁸⁵ and falling on the abducted arm.⁴⁵ The strain in others has been associated with some habitual occupation such as waiting at a table for a long

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period,⁵³ beating wash clothes,⁸² and the sudden slipping of a wrench "while making a connection between metallic tubes."⁵⁸ In contrast to these rather violent, excessive, or sudden muscular exertions are such curious, mild, and simple efforts, so expressively termed "banal" by Matas, such as stirring a Christmas pudding,²⁷ cracking a whip, swinging a golf club, and pitching a baseball.^{5, 53} Rarely cases are reported in which the condition develops as a complication of pulmonary tuberculosis,¹¹ influenza,³⁰ operation,⁵⁵ and polycythemia vera.⁸⁷

While the exact etiology of this condition has not been determined, certain theories have been proposed to explain its mechanism of development. Of these the earliest is the traumatic theory originally advanced by von Schrötter⁸⁴ who believed that the thrombus originated in a localized phlebitis produced by the sudden stretching and compression of the vein. Venous distention by respiratory effort was suggested as a contributing factor.^{15, 45} This theory gained support by subsequent anatomic studies. On the basis of cadaveric dissections Lowenstein⁵³ showed that with the arm in the abducted position the axillary vein is indented by the costocoracoid ligament and the subclavius muscle. These observations were confirmed by Gould and Patey³³ who, by injecting plaster of paris into the axillary vein, demonstrated indentations corresponding to the position of these structures. They also emphasized the significant presence of a fairly constant bicuspid valve in the vein, the subclavio-axillary valve, at the level of the subclavius muscle. Accordingly they theorized that venous distention and stasis accompanying forced expiration and trauma and pressure of the subclavius muscle on the vein with the arm in the abducted position was sufficient to rupture the delicate valve and initiate thrombosis. Willan believed that thrombosis was initiated by injury consequent to stretching of the axillary vein between the clavicle and the first rib. Other variations of the traumatic theory have also been proposed.^{71a, 85, 88} On the basis of roentgen-

ologic and autopsy studies Veal and McFetridge⁹³⁻⁹⁵ believe that the axillary vein is constricted not at the level of the subclavius muscle but against the subcapsularis muscle beneath the head of the humerus. While these various observations conceivably may be considered as predisposing factors, they do not satisfactorily explain the mechanism of primary axillary thrombosis in all cases. The inadequacy of the traumatic theory becomes readily apparent upon considering the cases of spontaneous thrombosis and those in which the preceding acts of "effort" or "strain" are so commonplace and trivial that were they significant in the precipitation of the attack the condition would occur frequently instead of rarely.

The theory of infection has been championed particularly by the French observers.^{16, 30, 47, 48} In his perspicuous study of this condition Matas⁵⁸ directed attention to the obvious clinical and bacteriologic evidence that makes "the theory of an infectious traumatic phlebitis --- untenable." Accordingly of seven cases in which the thrombus was removed and studied bacteriologically only three showed the presence of bacteria and in these there was an associated inflammatory reaction "not in conformity with the clinical history and termination of the great majority of these cases."

The sympathetic theory, more recently advanced by Cottalorda,¹⁸ is based upon the assumption that the clinical manifestations are due actually to venospasm (usually but not necessarily associated with a thrombus) initiated by sympathetic irritation consequent to trauma. This theory is in accord with the views of Leriche⁴⁹ and the authors^{13, 21, 22, 63-66} who have demonstrated clearly the presence of vasospasm and its significance in thrombophlebitis of the lower extremities. The theory also finds some support in the fact that a thrombus may not be present. Thus of 24 cases collected by Roelsen,⁸¹ including three of his own in which the axillary vein was explored, 12 (50 per cent) showed no evidence of thrombosis. Further strength is

given this theory by the definite improvement observed in the authors' cases reported below by the release of vasospasm and the production of vasodilatation by novocain sympathetic block. Whereas other important factors are probably operative in the pathogenesis of this condition, it would seem that vasospasm plays a significant role.

The clinical manifestations of primary axillary thrombosis are usually quite characteristic. Several hours or days following some type of sudden muscular effort or trivial exercise of the arm the patient experiences slight or no pain but observes a rapidly spreading edema associated with lividity or slight cyanosis which within 24 to 48 hours reaches its maximum intensity. The entire arm appears markedly swollen and dilated superficial veins become readily apparent over the upper arm, shoulder and anterior surface of the upper chest wall (fig. 1). The temperature is usually normal and there are no local or constitutional evidences of an inflammatory reaction. A



Figure 1. Infra-red photograph of case 2 showing numerous dilated superficial veins in upper arm, shoulder, and chest.



Figure 2. Phlebogram of case 3 showing marked dilatation of valves and distinct obstruction of axillary vein just distal to first rib.

firm tender cord may be palpable in the upper arm and axilla, corresponding in position to the axillary vein. No significant or characteristic sphygmomanometric or hematologic changes have been demonstrated. There is an increased venous pres-



Figure 3. Phlebogram of case 5 showing marked dilatation of valves, definite obstruction of axillary vein proximal to first rib, and numerous collaterals about shoulder and upper chest.

sure and a decreased oxygen saturation of the venous blood in the affected arm.³⁶

The diagnosis is usually self-evident. The common history of some preceding "effort" followed by the rapid development of a markedly swollen cyanotic extremity and the conspicuous contrast between the striking local manifestations and the notably absent constitutional reaction forms a distinct clinical picture. While such conditions as substernal goiter and other mediastinal and intrathoracic tumors, aneurysms, cervical rib and scalenus anticus syndrome, regional infections and enlarged lymph nodes, syringomyelia or other central or peripheral neuropathic disorders, and fractures should be included in the differential diagnosis, usually there is little reason for confusion. However, in cases of doubt the procedure of phlebography has a definite diagnostic value. This consists essentially in the roentgenographic visualization of the venous radicles of the involved extremity following intravenous injection of a radio-opaque substance. By this method of study it is possible to demonstrate clearly the site of obstruction in the axillary vein and the extent of involvement as well as the patent collateral venous channels (figs. 2 and 3). While thorium dioxide has been used for this purpose, diadrast is considered safer and just as satisfactory.

In the majority of cases the prognosis, both as regards life and subsequent morbidity, has been good. Whereas pulmonary embolism occurred in two cases,^{59, 83} only one was fatal and, as emphasized by Matas, this case cannot be legitimately classified as primary axillary thrombosis by effort. The duration of disability varies considerably, although in many cases complete restoration is effected within several months. In some individuals, residual symptoms may persist for years and in others subsidence of manifestations may be followed by recurrence on resumption of former occupation. This is clearly demonstrated by Matas' cases in which recurrences persisted for three years and by that of Jeanneney

and Mathey-Cornot⁴⁰ in which relapses persisted for six years.

Two forms of therapy, conservative and radical, have been employed. The conservative measures consist essentially of rest, immobilization and elevation of the extremity, application of compression bandages, and physiotherapy. These measures have as their purpose the relief of edema and the development of an adequate collateral circulation. However, if consideration is given the sympathetic theory, and there is good evidence for this, such measures are obviously inadequate. For this reason novocain sympathetic block of the stellate ganglion according to the technic previously described by the authors⁶² was employed in five of our cases. The rapidity of improvement and restoration of function and the absence of recurrence which followed this method of therapy seem to indicate its rational value.

The radical procedures consist of thrombectomy,^{7, 9, 46, 83} excision of the thrombotic segment,^{16, 18, 23, 30, 37, 69, 72} and multiple incisions⁹⁸ and needling. These last procedures are used with the purpose of more rapidly relieving the edema by permitting discharge of the tissue fluids. This seems a rather drastic measure for it invites infection and other unnecessary complications. Thrombectomy or excision of the thrombosed venous segment appears to have a more rational basis. These procedures are based upon the concept previously elaborated in the discussion of the sympathetic theory. According to the reported cases the results would seem to justify their employment. For this reason if under conservative management symptoms persist or recurrences develop, operative intervention and the excision of the thrombotic venous segment should be performed.

SUMMARY

1. Primary thrombosis of the axillary vein occurs relatively rarely although a careful review of the literature since Matas' exhaustive consideration of the subject indicates its more frequent occurrence. This is further revealed by the authors' un-

CASE REPORTS

Case	Date	Sex	Age	Occupation	Cause	Arm	Clinical Findings In Arm	Associated Conditions	Venography	Treatment	Course
1. W. S.	3/28/41	M	37	Timekeeper	Sawing tree- limb overhead	R	Swelling, lividity, impaired function. Palpable axillary cord. Dilated su- perficial veins.			Sympathetic block. Elastic bandages.	One yr. later complete re- covery.
2. J. H. M.	4/18/41	F	66	Housekeeper	Spontaneous	L	Pain, slight swelling, limited motion. Dilated veins. Tender palpable axillary vein.	Hypertensive cardiovas- cular disease. Aur. fibril- lation.	Showed ob- struction of axillary vein.	Elastic bandages.	Improved
3. M. H.	11/28/41	F	15	Schoolgirl	Beating time with baton	R	Swelling, lividity, limited motion. Dilated veins. Tender axillary cord.		Obstruction of axillary vein to 1 cm. of first rib.	Sympathetic block. Elastic bandage.	Three months later complete restoration.
4. A. B. B.	12/16/41	M	54	Carpenter	Sawing wood	R	Swelling, lividity. Pain. Dilated veins, axillary cord palpable but not tender.	Attack of influenza.		Sympathetic block. Elastic bandage.	Immediate improvement. No follow-up.
5. C. M.	1/5/42	F	16	Schoolgirl	Spontaneous	R	Swelling, lividity, fatigue, dilated veins. Axillary cord not palpable.		Obstruction of axillary vein to with- in 2 cm. of first rib.	Sympathetic block. Elastic bandage.	One month later almost complete res- toration.

usual experience of five cases in less than three years.

2. Whereas the condition may develop spontaneously, it usually occurs in relatively young, healthy, muscular individuals following some type of sudden or unusual effort. It most commonly affects males and involves the right arm.

3. The exact etiology of the condition is unknown but three theories, which may be considered as traumatic, infectious, and sympathetic, have been proposed to explain its mechanism of development. These are briefly reviewed and critically analyzed.

4. The characteristic clinical features of the condition are described and consist essentially of a brawny edema and slight cyanosis of the entire arm associated with dilated superficial veins over the upper arm, shoulder, and anterior surface of the upper chest wall. The striking local manifestations form a distinct contrast with the notably absent constitutional reaction.

5. The diagnosis is usually self-evident. In cases of doubt the simple procedure of phlebography has a definitive diagnostic value.

6. The prognosis both as regards life and subsequent morbidity has been good in the majority of cases.

7. Treatment may be conservative or radical, the latter being indicated for those cases which do not respond satisfactorily to the former. Attention is directed to the value of novocain sympathetic block as employed in the authors' cases.

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DISCUSSION

Dr. Matas (New Orleans): This excellent paper illustrates, as the authors say, the remarkable increase in the reported cases of the so-called primary thrombosis of the axillary vein by strain. In 1934, when I had occasion to call attention to this lesion, a careful search of the American literature showed that there were scarcely more than seven reported cases. Yet, in the short period of the eight years that have intervened no less than fifty or more cases have been added to the reports from this country. But even when we realize the extraordinary increase, the fact that Dr. DeBakey and his associates are able to report five more authenticated cases in less than five years within the sphere of their own personal observation is, in itself, a striking example of the well known fact that many diseases and many symptoms or signs of disease, previously unrecognized or deemed rare, suddenly spring out of the obscurity in which they have been submerged when their distinct individuality and unsuspected importance is recognized. It is probable that even now we would not be giving so much attention to thrombosis of the axillary vein caused by effort or strain, were it not that it has become an important cause of litigation for compensation and indemnity.

Despite the vast amount of writing that has accumulated in the literature of this lesion in recent years and the ingenious theories that have been evolved to account for its strange peculiarities, especially its polyvalent origin,—its disabling reactions to seemingly insignificant causes—and its preference for the veins of the upper extremities is still a mystery that justifies the at-

tention given to it. How to account for such disabling effects from such trivial and insignificant causes is not clear, but makes one think of some latent thrombophilia which predisposes to venous thrombosis, just as the victims of thrombopenia are made especially liable to hemorrhage from seemingly trifling causes.

While much can be done to relieve these patients by treating the individual according to special etiologic and symptomatic manifestations, I believe that in addition to the constitutional indications in dyscrasic patients (for example, colchicum for the gouty), that the best results may be expected from prolonged and complete immobilization of the upper extremity in a plaster casing to include the hand, whole arm and chest. Blocking the stellate ganglion with novocain, as proposed and practiced by the authors, is justified and worthy of trial in experienced hands; but in dealing with a capricious entity as this, it is difficult to make a definite estimate of its value on the basis of the present evidence.

The differentiation of the traumatic from the so called spontaneous cases still remains the outstanding medico-legal question before the Bar and the jury in compensation and indemnity cases.

Dr. Gage (New Orleans): I have enjoyed Dr. DeBakey's presentation for two reasons: I have been interested first, in the syndrome designated as effort thrombosis, and second, in the methods developed in the Department of Surgery of Tulane and the Ochsner Clinic for its treatment and cure.

I have seen several of the cases of effort thrombosis of the axillary vein and have been impressed with the nominal trauma and the extensive pathologic physiology resulting therefrom. The first venogram here was done on a case on the independent service at Charity Hospital by Dr. Veal at my suggestion. In this case the patient slapped at a mosquito during the night and the next morning his right arm was about twice the normal size. The venogram in this case demonstrated a complete block of the axillary vein.

Dr. DeBakey has had several of these cases and in each, venographic studies have invariably demonstrated a block (thrombotic) of the axillary vein.

I think we all are cognizant of the beautiful experimental investigations on thrombophlebitis and phlebothrombosis and their clinical applicability that emanated almost entirely from Tulane's Departments of Medicine and Surgery. These experiments unquestionably demonstrate that vasospasm plays a definite role if not in its etiology, a contribution to its progressiveness and persistence. This certainly is proof here tonight that following the removal of sympathetic inhibiting influences there results a rapid subsidence of the edema and a return to normal.

The etiology still remains obscure, but the resulting pathology is now thoroughly understood and is relievably by the methods advocated.

I saw a rather interesting case which is very rare. A patient in his early fifties who has this effort syndrome (thrombophlebitis) which was confined to his right lower extremity. He was an insurance collector and after a strenuous day's walking he retired only to find in the morning that his right leg was about half larger in size than normal. He deserted the hospital and did not return. Therefore, we were unable to investigate his case thoroughly. However, from his history, I feel positive that this was an effort thrombosis of his femoral vein.

I believe that we should investigate the lymphatics in these cases because I feel that single thrombosis of the axillary vein is insufficient to produce the clinical picture. We know of many

cases in which the axillary vein is occluded and there is no resulting edema. But in these cases thrombosis of the vein results in an extensive edema that is hardly compatible with single occlusion. As anomalies of the cervical lymphatics are not infrequent, and as the supra-clavicular axillary and upper extremity lymphatics have a common origin from the cervical jugular lymphatic system, it is possible that in these cases there is a congenital malformation of the lymphatics. If this be true, it would help to explain the extensive edema that always is associated with this syndrome. We all are cognizant of the difficulties of producing edema by vein occlusion and that it is absolutely essential to produce perivenal lymphatic obstruction concomitantly with venous occlusion to produce marked edema in the limbs of experimental animals. Accordingly it would be desirable to investigate the lymphatics in all future cases.

SYMPOSIUM ON HEALTH PROTECTION OF CIVILIANS IN THE PRESENT WAR*

NUTRITION

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"Food will win the war." This was the slogan of World War I that transcended all of the many slogans that were in those days employed to stimulate, to interest and to educate the peoples of the United States. This probably was as true a slogan as any of the many that were coined at that time because certainly the collapse of the Central Powers was due more to the inadequacy of the food supply amongst the civil population, than any other one factor. In the war days of 1914-18 food was thought of in terms of calories and not as substances which contained vitamins and minerals, requisite and necessary for good health. While it is true that the average German lost weight during this time of strife, actually few, if any, Germans truly died as result of starvation but they did suffer from chronic ill health as result of the incompleteness of their dietary ration. Their ill

health in turn begot mental depression, physical weakness and inability to accomplish the work necessary to keep the soldiers at the front supplied with arms and munitions. The downfall of Germany in 1918, which still had many millions of trained soldiers, was an internal collapse and undoubtedly it was the result of improper feeding of the population over a period of years. Subnutrition accounted for her overthrow more than any other one tangibility.

The Germans of today are not going to permit the same series of events to develop during the present war. Actually while the generation that lived during the war, and the one immediately after, still show the effects of their malnutrition, the present day young German is a splendid physical specimen. Shirer contrasts the appearance of some British prisoners taken by the Germans in Belgium with the German infantry. He writes—"I could not help but comparing them with those British lads. The Germans, bronzed, clean-cut physically, healthy looking as lions, chest developed and all. It was part of the unequal fight." Wilder¹ mentions the experiences of an American woman who was caught in southern Germany when Hitler declared war. He quotes her as saying that she had never seen such men—"Tall, broad shouldered, straight

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 28, 1942.

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backs, clear skins, lustrous hair, bright eyes"—they must have looked like young Vikings. It is said that this physical development of the young Germans has in good part been the result of the Germans' emphasizing the science of nutrition. The first ten years after the war the rejections of the German army were high as has been our experience with the Selective Service but they, the German youths, since then have been put on a diet which is adequate in every respect. The Germans have made use of every bit of food material that contains minerals and vitamins, as well as calories, but the first two elements have been particularly accentuated and stressed. The Germans are not only using all their available food material but also they are making use particularly of synthetics as well as those things which are considered waste products, in order to obtain additional minerals and vitamins. They even grind up the bones and use the powder as a supplement to the civilian and Army ration. They provide fat by collecting some 1,500,000 kilograms of kitchen waste every day to feed to hogs which in turn supply vitamin A as well as other vitamins. Their bread is made from flour of whole grains, their noodle dough is supplemented with cabbage, spinach, carrot and onion juice; vitamin C is also fed in tablet form. They are said to have manufactured as a reserve for future use 100 tons of synthetic ascorbic acid.

All this is said not to laud or to compliment the Germans; far be it from me to do this, but I cannot help feeling that the people of this country are looking back upon the experiences of the past war and feel that there will be a collapse of Germany sooner or later because of the economic blockade and because the Germans cannot obtain proper nourishment. The fact must be faced that we are engaged in a war with an enemy which is physically and mentally tuned up as no nation has ever been in the past. We have to face facts and we have to put our own house in order.

The evidences of nutritional deficiencies in this country at the present time are striking. Major Rizzo,² in a recent address,

points out how many of the selective service men were deferred or completely turned down on account of nutritional disorders and more particularly on account of horrible mouth conditions. This is particularly true of certain portions of Louisiana. Fifty-four per cent of the registrants in southern Louisiana who were disqualified in the early draft examinations, were disqualified because of faulty dental states. However, for the state as a whole the average was 27 per cent and over the entire country it was slightly under 21 per cent. Granted that draft standards were high, nevertheless it definitely points to the fact that these people of southern Louisiana have been living on an inadequate diet and one that lacks vitamins A, C and D, as well as calcium and phosphorus.

A most graphic evidence of widespread malnutrition in the State of Louisiana may be obtained from a recent survey made by the Louisiana State Board of Health at the request of Dr. John M. Fletcher, chairman of the Louisiana Educational Survey Committee.³ Children were studied in seventeen parishes scattered throughout the state as to their nutritional status. It was found that only 60 per cent of the white children could be considered to have excellent or good nutrition, whereas 40 per cent had fair, poor or very poor nutritional states. It is only right to say, however, that of this latter group approximately 70 per cent could be classified as having fair nutrition. Nutrition was notably poor in the children in the lower grades. For example, of 230 children in grade one, 127 of them would be considered as malnourished, or 55 per cent. It is true that this sampling of the school population is not large enough to be statistically important but it is at least highly suggestive.

The most widely quoted figures as to national malnourishment and the ones which led to the calling of a national conference on nutrition in Washington a year and a half ago are those which were compiled by Stiebeling and Phipard⁴ who found that in a study of the expenditures for food of individuals living in eight different geographi-

cal areas in the United States who were wage earners and low salaried clerical workers, that about half of the people were living on poor diets. On the basis of this observation the pronouncement has been made that 45,000,000 people in the United States are malnourished. I do not think for a minute that these figures are accurate. I cannot possibly conceive of so large a number of our citizenry suffering from undernourishment. But the Selective Service figures, these figures of Stiebeling and Phipard and certain nutritional studies, would indicate that there are large sections of the population of this country who are undoubtedly suffering from subclinical deficiency. This is a very important problem of our national defense. Four years ago in the section on nutrition of "Internal Medicine" I wrote on chronic dietary deficiency, pointing out that while frank expressions of avitaminosis are extremely uncommon, chronic dietary deficiency—"the malnutritive state characterized by a group of non-specific symptoms and signs arising from a deficiency in the diet of any or theoretically all of the essential food factors is extremely common." Such people are lean, they have dyspepsia, and headache, loss of appetite, they are irritable, suffer from vague pains and aches, and above all, those symptoms of importance at the present time, fatigue and weakness and mental depression are paramount. There is a host of evidence that can substantiate these statements. For example, Williams and Mason⁵ have shown that emotional stability is impaired, and mental and physical efficiency are markedly lowered as result of thiamine restriction. It is well known at the present time that dental defects, skeletal abnormalities, anemia, underweight, functional gastrointestinal symptoms are the direct result of an inadequate, improper or carelessly selected diet. Are not the shiftlessness and laziness of many of our poorer crop-sharing tenants of the South due to the economic cause of a limited income which prevents them from buying foods which will contain thiamine, nicotinic acid, ascorbic acid and calcium? It is known that the income of

4,000,000 families in this country is less than \$500 a year, that 27.5 per cent of the remainder live on an income of less than \$1,000. These small incomes include not only actual money values but also the equivalent of income from what is grown on the land. Certainly the budget of one of these poor families does not provide enough nor can it assure adequate food for the children or for the adults.

Wilder, the chairman of the Committee on Food and Nutrition of the National Research Council, has presented the facts of the case in a masterly article recently published in the Journal of the American Dietetic Association which I would suggest that those of you interested might read with great profit. In the same number of this journal is an article by Mitchell⁶ of the Health Defense and Welfare Services in Washington. Her suggestions to remedy the present condition of affairs which would certainly mitigate against our fullest efforts in defense are stimulation, information and application. By stimulation she recommends that every citizen should be stimulated to obtain his optimum health and well being; by information she stresses the importance of education and of teaching people concerning food values and human nutritional requirements; and by application she calls for the cooperation of both the farmer, distributor and consumer, the farmer to raise proper kinds of food, the second to distribute the foods in proper physical condition and the latter to apply nutritional principles in meal planning.

The suggestions of Mitchell⁶ are of course splendid in every respect but specifically it seems to me that there are two or three objectives that the doctors of Louisiana can seize upon in order to forward the movement to bring about nutritional efficiency in their clientele. First and foremost is the building up of the youngsters and for the time being until the parents are properly educated or have sufficient funds this best can be accomplished by proper school lunches. This point cannot be stressed too strongly because many a poor child receives the greater part of his calories and the best

part of his vitamins and minerals in the school lunch. For the most part these school meals are selected with intelligence, tastily prepared and greatly enjoyed by the children. A parochial school in which I happen to be interested is materially aided by the food stamp distribution of the Government. A Friday meatless luncheon consists of rice, red beans, the sauce of fresh tomatoes; it is supplemented by chocolate from dried milk, by whole wheat bread, by marmalade and fresh apples, nearly all of these foods being supplied by the surplus commodity corporation on the stamp plan.

The next is the importance in advising the farmer to raise protective foods. Too often the small farmer is a one or two crop man and will not raise grains and fruits, will not have a cow or a pig and often not even an egg-laying hen.

Lastly I would suggest the whole hearted endorsement and active propagandizing by the medical profession of the use of fortified bread. Bread is a staple which makes up a goodly portion of the calories in the average dietary. White bread is totally inadequate in minerals and vitamins. The fortified bread contains additional vitamins and minerals added in part from artificial sources and made up in part by the minerals and vitamins which have not been removed by the process of milling the grain. I cannot come to the end of my talk without saying a word or two about pasteurization of milk. Milk is the most important ingredient in the young person's diet. Yet one hates to stress the importance of this food and the necessity of its being incorporated in the diet without a qualm of conscience that the milk may not be safe milk. If pasteurized, it can be drunk with confidence and recommended by the physician, without the fear that it will be responsible for a milk-borne disease.

SUMMARY

The people of the United States need have no worry about the quality of food provided their soldiers and sailors. It is ample in amount and adequate in quality. They do need to worry, however, about the people behind the soldiers—the future soldiers and

those who are engaged in the many activities of national defense who cannot function efficiently and give their best efforts to supporting our armies in this world-wide war without their receiving food which will ensure good health, both physical and mental.

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EMERGENCY WATER SUPPLY AND SEWAGE DISPOSAL

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Modern war is total war. This statement has been made so frequently during the past few years that there is danger that many will come to consider it trite and unimportant.

Formerly, civilians were supposed to get out of combat areas. Today, the possessions of belligerents—and, too frequently, the country of those who would be neutral—lie within the theater of war, and the enemy strikes hundreds, even thousands, of miles from actual combat areas.

Today, the Battle of Production has attained an importance greater than ever before, and no community which produces anything of importance to our war effort, and there are very few which do not, can consider itself free from the danger of enemy attack either from within or without, from sabotage or from air raids.

It is this threat of harm which constitutes a general emergency at present.

The protection of public water supplies, furnishing an adequate supply of safe water

for drinking in case of failure of the public supply, and providing means for proper disposal of body waste constitute some of the most important problems of civilian defense.

Water is essential for the maintenance of life. Contamination of water and food by war gases may result in casualties or even death; and contamination of water by sewage is the means of spreading typhoid fever, dysentery and other enteric diseases.

Water is essential for fighting fires. The incendiary bomb is one of the chief weapons of the enemy air force in attacks on cities, and some reporters have stated that fire has caused the greatest damage to property in England during the period of bombing.

One sort of food may be used in place of another kind, various types of transportation may be used, repairs may be made to damaged structures, but there is no substitute for water, and all too frequently it is impossible to repair loss and damage which may be caused by gas contamination and the lack of sanitation.

The affair at Pearl Harbor was a rude awakening to those who believed that "it cannot happen here." It did happen there, and it can happen here.

We hope for the best; but we should plan for the worst and should prepare to implement our plans according to needs as they develop. Some enthusiasts for preparedness have caused expenditures of effort and of materials which might have been used otherwise to greater advantage. On the other hand, failure on the part of some to distinguish between planning and the making of actual preparations has delayed needed planning on the grounds that money for materials should not be spent until the need is real and acute. Planning takes time, and we cannot buy yesterday. We should plan now and we should not delay too long the making of preparations.

For what should we plan? For sabotage, all out raids, occasional raids, or token raids? For sabotage, definitely, yes! It seems too soon yet to expect all out raids or occasional severe raids; but those who should know say that coastal cities may expect token raids.

Sabotage may be undertaken to break down morale or, more probably, to cause such damage as would interfere with military effort, or the production of military supplies. Protection of water supplies against sabotage is a matter of considerable importance, and is primarily a matter of vigilance and of providing some extra precautions.

During the present war, as during the last war, few acts of sabotage against water supplies have been reported from Europe, but conditions in the United States and its possessions are different. American authorities consider that the protection of water supplies against sabotage is a matter of prime importance.

The State Board of Health has been active in this matter for the past year. It was discussed at the Short Course for Water Plant Operators, held in Baton Rouge last June, and the Engineering Division, through its regional engineers has been advising local officials of this need in connection with our routine inspections of public supplies. At present an intensive program is under way to develop adequate protection for supplies at key points.

There has been some discussion in newspapers and technical journals of the possibility of danger to water supplies by the introduction into the supply of pathogenic bacteria or of war gases or other poisonous materials.

While the possibility of contamination by pathogenic bacteria must be borne in mind, the danger seems remote. Those familiar with bacteriologic procedures can visualize the difficulty of dealing with the large volume of cultures which would be necessary to get results, and, furthermore, treatment processes in general use would be effective in eliminating the bacteria.

It is extremely improbable that a sufficient amount of toxic material could be placed in a water supply reservoir to give a harmful concentration. However, even a slight contamination, sufficient to scare people, would be of importance since it would cause a number of persons to use

other sources of supply which might not be safe.

So far in the present conflict we have no accounts that any water supply has been intentionally polluted by the saboteurs or by enemy action. With the exception of a few Japanese attacks in China and Malaya, no gases have been used in military action. The attacks upon the smaller European nations did not include action against water supply other than that related to direct military action. England has reported no water supply sabotage problems.

Nevertheless, this form of attack is a possibility and we should organize for defense against any and all forms of attack. The Japanese did make a definite and successful attempt to cut off the sources of supply of Hongkong and Singapore which were some distance from the cities.

In a recent article by an Army Officer, it is stated that for the past several years the Army Medical Corps, the Sanitary Corps and the Chemical Warfare Service have been working together on a study of this problem. Methods have been developed for the removal of contamination due to war gases by means of the usual water treatment plant equipment with relatively slight modifications of usual filtration methods. Where filters are not used, removal is possible but more difficult. Safe limits have been determined for various toxins and gases, and relatively simple quantitative tests have been developed to determine their presence.

In this country, the greatest damage to water supplies from enemy action is likely to come from bombs delivered by aircraft. This danger may seem remote, but we must prepare to meet it.

Let us consider briefly the effect of bombs. Bomb crater sizes depend on size of bomb, nature of material hit, and length of time fuse. A distance of 20 feet may be considered as an average diameter of a bomb crater. Average penetration distances are: for a 100 pound bomb, 11 feet; for a 500 pound bomb, 15 feet; and for 1,000 and 2,000 pound bombs, 22 to 25 feet. A 1,000 pound bomb dropped from 20,000

feet in clay soil will penetrate from 30 to 40 feet.

Where a 2,000 pound bomb explodes, pipes and sewers 65 feet distant invariably are broken; where a 3,500 pound bomb explodes the distance would be 75 to 80 feet; and, depending on the nature of the soil, the earth shock may break sewers and cast iron pipes at even greater distances.

Approximately 25 per cent of bombs fall in streets where they may affect water and sewer pipes. As many as 20 breaks in one night have occurred in some raids. It is estimated that the water department must be prepared to repair one break in each size pipe in each 10 square mile area.

Even though the water and sewer pipes were not laid in the same trench, about three-fourths of the streets in built-up areas contain both water and sewer pipes. The craters are usually large enough to include breaks in both, and the crater promptly fills up with a mixture of sewage and water, resulting in contamination of the broken water main. Hypochlorites are used liberally to disinfect mains as they are repaired, with dosages varying from 10 to 50 ppm free chlorine. Special attention is given to removing any solid material which has entered the pipe while it was broken. Stirrup pumps are used to force hypochlorite solutions into mains through hydrants.

Since the outbreak of war the Ministry of Health has ordered the sterilization of all drinking water and, owing to its low cost and ease of application, chlorination is universal. (In the United States all surface water supplies and many ground water supplies are chlorinated.) Some authorities in Britain maintain a residual chlorine content throughout the system, some increase the dosage during enemy action, risking chlorine taste troubles in the interest of security. Complaints are said to be few since the people have learned that a chlorine taste is an indication of safety. A residual chlorine content throughout the entire distribution system is an excellent safeguard, and the use of such a method has been recommended by some people in this country.

However, the Board of Directors of the American Water Works Association, after a thorough study, has disapproved this practice as a general requirement. It is not practicable under many conditions, or necessary. The Board has recommended in lieu thereof certain other procedures.

Pending repairs to broken mains in "blitzed" areas, it is necessary to deliver water for potable purposes in tank trucks or other containers. From 20 to 30 gallons per household are allowed in London.

The British feared that with the inevitable damage to water mains and sewers by bombing, there would be a considerable increase in typhoid fever. Fortunately this has not happened. In London, for example, it is reported that every type of water pipe has been broken in all sorts of ways, that broken sewers have discharged their contents into broken water mains and thus spread pollutorial material over long distances. Thousands of breaks have occurred; one main 4 feet in diameter has been broken at least eleven times. There have been paratyphoid outbreaks traced to contaminated food, but Sir Wilson Jameson, Chief Medical Officer of the Ministry of Health, London, England, has stated that neither in London nor elsewhere has there been any outbreak of typhoid fever due to damage to water mains and sewers as a result of air raids.

When there is imminent danger of air raids, water should be stored on the premises for drinking and for putting out incipient fires and incendiary bombs. Drinking water should be kept in bottles or other tightly closed containers. Water for washing or for fighting fires may be stored in barrels, buckets or other containers. In this section of the country such containers should be emptied and refilled weekly, or should be treated to prevent mosquito breeding. Addition of borax in the proportion of 2 ounces of borax to five gallons of water provides a simple and effective method of control.

One of the bulletins issued by the Office of Civilian Defense recommended that at the sound of an air raid warning bath tubs,

barrels, and other containers be filled with water for fire fighting. This is dangerous advice. If followed, it would double the normal rate of demand and would cause a serious reduction in water pressure just when the fire department needs plenty of water under good pressure to fight fires caused by the air raids.

Sometimes, in an emergency, flood or drouth, or when the public supply is damaged, it is necessary to use water from springs or wells which may be unsafe, or at least not known to be safe. Under such circumstances, the water should be sterilized before being used as drinking water. Some methods of sterilizing water in small quantities are given here:

Boiling: Boil for two minutes if fuel is available.

Chemical treatment: Hypochlorites are the most readily available and effective chemical agents.

Chloride of lime, HTH, perchloron: A stock solution may be made by adding one teaspoonful of chloride of lime (containing 24 per cent available chlorine) to one quart of water. This stock solution should be kept in a well stoppered bottle. One teaspoonful of the stock solution is added to two gallons of water. The water should be thoroughly mixed and allowed to stand for a period of 30 minutes. After this time, the water will be safe to drink. If a chemical containing a larger percentage of available chlorine is used, a proportionate amount should be used in making the stock solution.

Zonite: A disinfectant usually available in drug stores. Add 10 drops of Zonite to a gallon of water and let stand one half hour before using. Seven teaspoonfuls of Zonite will disinfect 50 gallons of water.

Liquid hypochlorites: There are a number of laundry bleach solutions in grocery stores, and of disinfectants sold by dairy supply houses, which contain, usually, 50 per cent available chlorine (the strength of the solution is stated on the label). Two drops of these solutions added to one gallon of water are sufficient to disinfect waters not too badly polluted.

Iodine: Add four drops of tincture of iodine to one gallon of water. Mix thoroughly and let stand at least one-half hour before using.

The possibility of sabotage against sewerage systems must not be disregarded. The same principles which apply to the protection of water supplies apply to the protection of sewerage systems. It is most important to investigate carefully the history, background and loyalty of every employee.

Sewerage systems are particularly vulnerable to air attack, as may be noted from the previous discussion of the effect of bombs and from the fact that sewers are generally made of vitrified clay, not of metal pipe. Of course, all parts of the system are not equally vulnerable. Little can be done to protect against air attack, except to provide means for prompt repair to damaged parts of the system in order to restore service promptly. Experience in Great Britain has developed much interesting information on ways and means of dealing with emergencies, but the details would be more interesting to engineers than to physicians.

The disposal of human wastes where a sewerage system is not available, or where the water supply is temporarily out of service presents a problem for which there is no wholly satisfactory solution.

In refugee camps, where sufficient area can be obtained, pit latrines properly constructed and properly maintained are satisfactory. We have had considerable experience with these in Louisiana, in camps for refugees from flooded areas.

Chemical toilets may be used in air raid shelters. In urban areas temporary latrines may be set up over sewer manholes, or over shallow post holes dug in the back yard where it is large enough. In some sections of Great Britain scavenger services similar to our garbage collections were set up, and the material carried out of town and buried or dumped into rivers. Liberal use of disinfectants will assist in minimizing nuisance and spread of infection. We are informed that cooperative studies are being made by federal agencies and paper man-

ufacturers to develop a watertight paper bag which can be placed within the toilet seat, used as a container and then disposed of through the regular garbage collection system or a special scavenger service.

POTENTIAL EPIDEMICS IN LOUISIANA

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In considering potential epidemic diseases in Louisiana under war conditions, it is impossible to dismiss the subject by stating that our present level of personal hygiene is relatively high and that our public health control of disease in this state is both adequate and competent to care for potential epidemics. Even though these statements may be relatively accurate, we have as yet in no essential way experienced the hardships or effects of total war efforts. Probably today as never before in our history the average individual or family of low economic level is well-nourished, well-clothed, works less than a third of his time and gets plenty of recreation in his motor car which for several months more will still keep rolling along. But within two years our eating will most probably be qualitatively restricted; much of our clothing will be threadbare and not necessarily adequate for cold, wet winter weather; we will be working many more hours a week, our recreation will be greatly reduced, and our nerves frequently on edge. These several factors will combine to effect a greatly lowered threshold of resistance to the pathogenic organisms which may be transmitted and may become greatly enhanced in their virulence by more rapid passing through a more susceptible population. Moreover, we must be prepared not only for the diseases at present within the confines of Louisiana or the United States, but for more virulent types or strains, including exotic infections of the Tropics, brought back by troops which have seen service in hyperen-

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demic areas. This is the sanely pessimistic prospect which must be faced.

What types of diseases might possibly develop to epidemic proportions within the confines of our state? They may be epidemiologically classified as: (1) those carried by water, food and flies; (2) those primarily of the respiratory tract, and (3) those which are insect transmitted.

Water, food and flies: Today our water supplies are intact. No demolition bombs have fallen on the water filtration plants. Our sewage disposal is uninterrupted and is not now overtaxed. Thus, at the present moment, there is no probability of a major water-borne epidemic. Should any one of these sanitary facilities fail, we might expect an epidemic of typhoid fever, amebiasis or bacillary dysentery of considerable proportions. Should cholera be introduced into our area from abroad, the situation would be grave indeed, since few physicians in Louisiana are today experienced in the recognition and treatment of cholera. Moreover, if food at present condemned as unfit for sale should of necessity be sold and eaten, an additional danger would exist. If garbage collection should be reduced in our urban communities, and flies breed in great numbers around homes and in food markets, a serious supplementary danger would be provided, for it has been proved that filth flies may make a major contribution to the development of epidemics of amebic and bacillary dysentery, typhoid and cholera. Today 10 to 20 per cent of the population of Louisiana harbors the organism of amebic colitis, which for the most part exists in an inapparent or carrier condition. Likewise, mild chronic bacillary dysentery is by no means rare in this state, and typhoid occasionally develops in small groups. Reduced resistance of the population and greater exposure resulting from contamination of water, food and flies will unquestionably increase clinical manifestations of these endemic enteric diseases.

Respiratory diseases: Greater exposure and lessened resistance to infection will materially increase the likelihood of influenza and pneumonias, as in World War I. More-

over, pulmonary tuberculosis has already produced a considerably enhanced morbidity rate in European countries which have been engaged in total war efforts. How can we expect to escape these respiratory infections?

Insect-borne diseases: Today, within the borders of our state there are malaria, rodent flea-transmitted typhus, and tick-transmitted relapsing fever. Not far removed to the northwest are the apparently nearest rodent foci of plague and tick-borne Rocky Mountain spotted fever. These disease entities are now either mildly endemic in Louisiana or are outside our state. Nevertheless, malaria covers a considerable part of our state, and murine typhus has developed into an ever increasing health problem since it was first recognized in Louisiana in 1930, fifty years after the last recorded case of classical louse-borne typhus in Louisiana. These are conditions existing in peace-time.

Yellow fever has been absent from Louisiana since 1905 and dengue since 1923, but the transmitter of both, *Aedes aegypti* (the *Stegomyia* of former years), today breeds prolifically in jars and pots in yards and in cemeteries, and the population is probably 90 per cent susceptible to yellow fever. Should infected *Stegomyias* or incubating human cases reach New Orleans by airplane from endemic foci in Brazil or Colombia, an epidemic considerably greater than those of 1897, 1898, or 1905 might be anticipated. What provisions are we taking in our state to prevent an outbreak of yellow fever or dengue?

Epidemic encephalitis, which is transmitted by several species of mosquitoes in the United States, may potentially develop to epidemic proportion in Louisiana as it has in relatively recent years in St. Louis and on the East and West Coasts. Sporadic cases actually have appeared within recent months in our state, suggesting a reservoir of undiagnosed mild cases, from which an epidemic might readily spring. Since this disease may be transmitted by wild as well as domestic species of *Aedes* and *Culex* mosquitoes, Louisiana, like New Jersey, would

constitute an essentially unprotected area should these viral infections get out of control.

Unquestionably many cases of chronic tropical malaria will be brought into Louisiana within the next few years by returned troops. What preventive measures are we setting up to keep these virulent tropical strains from becoming established in our malaria mosquitoes in Louisiana?

In one respect we may feel fortunate. The relatively light-weight clothing of our population, lacking heavy cotton or woolen underwear, keeps human louse infestations down to a minimum, confined primarily to indigent transients. But in homes for transients, measures should be instituted, as in the Charity Hospital in New Orleans, to disinfect the clothing of all sojourners on their admission to these homes. Otherwise, louse-borne epidemic typhus and relapsing fever may conceivably develop in these homes of refuge, just as these diseases have assumed epidemic proportions in comparable groups of the population in other countries ravaged by war or famine.

Finally, thousands of defense workers are migrating into Louisiana. Many of them will live in congested quarters, many will be ignorant of our health codes, many will be particularly susceptible to diseases endemic in Louisiana. This group will constitute a special health problem.

The picture which has been presented is relatively dark, but it is not hopeless by any means, provided we are aware of the potentialities of epidemics and take effective measures to prevent them. Let us not say "It can't happen here!"

PREVENTION OF COMMUNICABLE DISEASES UNDER WAR CONDITIONS WITH ESPECIAL REFERENCE TO IMMUNIZATION

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If we knew what the future would hold with respect to the prevalence of communicable diseases during the remainder of this war the subject could be dealt with in a more satisfactory manner. In the absence

of this knowledge we can only look abroad and observe the experience of other nations, especially England, whose health condition is more nearly parallel to ours than that of any other country, and look back to our experience in World War I. So far as available information goes, we find nothing especially to alarm us. Judged by the published reports the health situation in the British Islands has seemed quite good and, barring a major military disaster, one sees no reason to view the future with great concern either in Britain or in the United States.

However rosy the situation may appear just now, we must remember that we are living in an era of fast moving events with rapid social, political and economic changes and that these may affect health conditions just as they already have begun to affect us in other fields. No one can confidently predict the possible hazards of the future when among other factors we may not have even as high nutritional conditions as we have now, when soldiers in large numbers will be returning from tropical areas, and when other now unforeseen factors, may be operative. While we may hope that conditions in the future, as in the past, will result in a general elevation of the public health of the Nation, it is quite conceivable that the reverse may occur.

Influenza, probably the most to be feared of all epidemics in temperate climates, and especially one to cause alarm in time of war, has so far, both in England and in the United States, been rather mild with little of the often serious complicating pneumonia. This was the experience of the first year of the present mobilization and let us at least indulge in the hope that it will continue through subsequent seasons.

In previous wars, cerebrospinal meningitis has been one of the major diseases among troops, and the civilian population also has suffered in a considerable degree. We can advise isolation of patients and contacts and search for carriers, but in truth, there is little we can do in a prophylactic way. Fortunately, the last few years have seen great strides in the therapeutic man-

agement of these cases and if published reports are to be trusted, some of the "sulfa" compounds have succeeded in reducing the death rate of cerebrospinal meningitis to a small fraction of what it was before.

The successful use early in the development of immunization of smallpox vaccine, diphtheria antitoxin and rabies vaccine have led to unwarranted optimism among the laity and to some extent among the medical profession as to the use of serums and vaccines in the prevention and cure of disease. This is well illustrated in antimeningococcic serum. Many years ago when it came into use, the current appraisal, almost without dissent, was that the serum had reduced the mortality of cerebrospinal fever from 75 to 25 per cent. This cheerful opinion of the profession persisted until very recent years, in spite of the fact that experience was demonstrating that the serum was far from being highly successful. As soon as effective chemotherapeutic agents came into use the serum rapidly fell into disuse and I think that in the near future we will be asking ourselves if it ever was worth anything.

In general I am to be numbered among the conservatives in the use of serums and vaccines and if I do not seem, in this paper, to be as enthusiastic as some of my friends you will understand that I have a weakness for controlled clinical evidence rather than for personal opinion. The results of animal experiments unsupported by data derived from the use of preventive and curative agents in the human species also leaves me cold. I am afraid that my conservatism is of such an order that given two reports, one affirmative, the other negative, presented by equally responsible workers, I am more likely to be influenced by the negative than by the affirmative results. I personally have seen so many pitfalls in the appraisal of prophylactic and therapeutic agents that you will have to make necessary allowances for what may seem a lack of enthusiasm on my part, excepting for well established biological products. Furthermore, admitting the benefit likely to be secured from a given preparation I want to know the risks in-

curred, from the infection under consideration, by the population. Let me illustrate again: The evidence of the value of Rocky Mountain spotted fever vaccine seems to be so well established that I would advocate its use in the areas in Montana and perhaps elsewhere where the disease is quite prevalent so that one would need to vaccinate only a few hundred persons to prevent one case; on the other hand I would not advocate its use in the Southern states where the disease is so rare that one would have to vaccinate many thousand individuals to prevent one case.

The immunizations and other preventive medicine needs of a civilian population in war time are the same as those in peace time, but effort should be made to accelerate and to intensify well thought out programs. The number of individual protective measures that need to be taken are limited.

We will put at the top of this list smallpox vaccination, the oldest and most effective of immunization procedures. We have in this the only certain measure for the prevention of smallpox; quarantine and isolation have their places but are of relatively little importance. There is some difference of opinion as to the age at which smallpox vaccination should be done. It is my own opinion that it cannot be done too early, but in any event, not later than the age of six months. It should be done again on entrance to school at about six years and thereafter whenever smallpox threatens or prevails.

There are two complications that need to be mentioned: First, postvaccinal encephalitis which usually is very rare, but when it does develop, it has most distressing possibilities. Fortunately, it occurs almost exclusively when vaccination is performed after the age of two. Obviously the preventive measure is early vaccination. Second, post vaccinal tetanus which has become almost obsolete since the practice of using shields and dressings has been almost universally discontinued.

As to the technic of vaccination I confess a preference for the multiple pressure

method, which is warmly advocated by J. P. Leake.¹

Next in importance I would place diphtheria toxoid immunization of all susceptibles under 10 years, preferably at not later than one year of age. There is some difference of opinion as to whether we should use plain toxoid in three doses with intervals of three weeks to a month between them, or the more recently introduced alum precipitated toxoid with a little longer interval between the two doses now recommended for this preparation. When alum precipitated toxoid first was introduced we had high hopes that a single dose only would be necessary to give protection. With the accumulation of experience, however, it has been clearly established that two doses are much more dependable. It is noteworthy that only smallpox and diphtheria immunizations are stressed in "Child Health Day Program" of the Government: "Immunization against typhoid, tetanus, whooping cough and scarlet fever may also be performed when indicated in the judgment of the physician."²

Typhoid vaccination presents difficult problems in civilian populations, since it is by no means so surely effective as it appears to have proved in military experience. It should never replace well established sanitary procedures, especially purification of water supplies, adequate sewage disposal, milk control and carrier control, but may be used as a supplement to these. In recent years, thanks to the efforts of research carried out at the Army Medical School in Washington, typhoid vaccination has been modified and doubtless improved especially by the use of a strain of better antigenic qualities, and better tests have been devised for the efficiency of the vaccine. Possibly these improvements will result in more encouraging experiences with respect to civilian populations, but the newer vaccines have not been used on a large enough scale and over a long enough period to permit of final appraisal. It is clear to me that the decision as to this particular immunization procedure should depend somewhat on the extent of typhoid in a community. In many

areas, especially Northern and Eastern states, typhoid fever has become so rare as not to justify the effort and the expense required to immunize the whole population. Even in many Southern communities, while the rates are much higher than in the North, it is a serious question as to whether they warrant general vaccination. Outbreaks of dysentery would require approximately the same control methods as typhoid fever except that in dysentery vaccination is impractical.

It is current practice to give tetanus toxoid simultaneously with diphtheria toxoid and I can see no objection to this practice; indeed, I regard it with favor, although tetanus in the aggregate is so much less prevalent than diphtheria that one cannot make so good an argument for immunization against the former. In occupational groups in which the tetanus hazard is high tetanus toxoid immunization is imperative.

Whooping cough vaccination is becoming somewhat popular and on the basis of evidence probably should be used more widely than at present. It has the disadvantage of requiring more injections than most of the other vaccines and we lack tests to determine when immunization has been effected.

Immunization against scarlet fever is a problem about which I am not clear. The general policy has been to leave this to the judgment of the individual family physician rather than to have it applied on a community wide scale. I have no doubt that it is possible to immunize against the scarlet fever streptococcus toxin, but the requirements of a pre-immunizing Dick test, at least five weekly injections of the toxin, and a post-immunization Dick test are just a little too much to be generally applicable. This taken with the relatively low fatality rates for scarlet fever in this country leaves me lukewarm on this particular subject. Scarlet fever convalescent serum and measles convalescent serum have their place of usefulness in passive prophylactic immunization of exposed children in special circumstances. They are not available for wide application.

The so-called placental extract or immune globulin of the pharmacopoeia for the prophylaxis of measles seems to have been well established. As you know, the aim ordinarily is not to prevent measles but to so modify the disease as to lead to a lasting immunity without danger to the child in the natural immunization due to an attack. To accomplish this the globulin must be given at just about the right time, that is, from five to seven days after exposure. Given earlier than this it is likely to prevent the disease and therefore prevent permanent immunization; given later it is likely to be ineffective.

The Army recently has tentatively adopted vaccination against certain of what we might call major epidemic diseases, yellow fever, plague, cholera and typhus. The Army appreciates fully the wholly experimental stage of these immunization procedures aside from yellow fever vaccination and doubtless will, in due time, give us an answer to the question of their efficiency. If I may deal with these briefly, my views might be summed up as follows:

Yellow fever vaccine seems to be highly effective, but the type of yellow fever conveyed by mosquitoes is, it seems to me, much more readily controlled by anti-mosquito measures than by immunization. The vaccine is a living virus given in a single dose. It is the only effective measure, so far developed against the jungle type of yellow fever, and for persons who are likely to be exposed to this its use is imperative. I see no likelihood that this type will be established in the United States.

With respect to plague immunization it is, in my judgment, of such uncertain value that I would prefer to ignore it in planning an anti-plague campaign, restricting myself to warfare against rodents, especially rats. The only type of anti-plague vaccine that seems to me to be effective is that devised by Otten³ which consists of a living avirulent culture of *Pasteurella pestis* of high antigenic activity, but even this would hardly be required except under very special conditions where anti-rodent measures could not be carried out. Pneumonic plague,

of course, requires early isolation of patients and contacts.

In view of the ever present threat of plague, rat control should be one of the health objectives of every seaport. This is especially true of communities on the Gulf of Mexico where experience has shown that plague may effect a foothold. It is well known that our Rocky Mountain states and, those farther West have sparsely distributed plague infection among wild rodents—especially ground squirrels. What in the way of an epidemic might develop from this under certain conditions cannot be predicted.

When we consider the various other diseases due to rats; endemic typhus and spirochetosis, and when we consider further the destruction due to the rodents, any community should place rodent control well up in the list of public health objectives.

With respect to cholera, nearly all the published data are favorable to anti-cholera vaccination, but most health authorities are a little uncertain as to the dependability of much of the published evidence. If I had to plan a cholera campaign it would be directed towards securing pure water, and pure food supplies with such attention as may be necessary to the discovery and isolation of cholera patients and carriers of the disease.

The problem with respect to typhus naturally divides itself into two parts, depending on whether we are dealing with epidemic, louse-borne typhus which is communicable from man to man through the body louse, or with the rat-borne disease which is transmitted from the rat to man by rat fleas. The latter is of such small importance that we hardly advocate vaccination, even if we had a certainly effective vaccine. Epidemic typhus, however, during and after wars has been a serious problem. Theoretically, it is easy to control this form of typhus by delousing measures and probably in practice the success of control efforts would definitely depend on the efficiency and speed of carrying them out.

The suggestion is made that the body louse prevalence is so low that under pres-

ent conditions in this part of the country it is not likely that epidemic typhus will become seriously prevalent. The same measures that are available against louse borne typhus should be effective against the louse borne type of relapsing fever. The aim of preventive measures against these diseases is the reduction of the human body louse. In thinking of the problem that would confront a health officer in relation to either I have wondered if the most effective readily available delousing facilities would not be those afforded by laundering and dry cleaning establishments.

Typhus vaccine is just now being made the subject of a large well-controlled experiment in South America. When the results of that test are available we should know pretty certainly just how effective this vaccine will prove to be.

The relation of the relatively mild typhus of rat origin and the malignant epidemic type is by no means clear and there is some uneasiness among health authorities as to the possibility of the former developing into the latter.

I might sum up by saying that with respect to this particular group of the major pestilences, I would prefer to depend on well tried measures of prevention which do not involve immunization procedures, with the sole exception of jungle yellow fever.

It is regrettable that the captains of the men of death among epidemic diseases, influenza and pneumonia, do not lend themselves to preventive measures. I am afraid we are no further advanced with respect to prevention of these diseases than we were when we went through the influenza pandemic of 1918. That situation might be summed up by saying that we could do little more than care for the sick. Attempts at preventive measures were unsuccessful. I am familiar with the brilliant work which has shown us that influenza is a virus infection, a multi-virus infection, one might say, and that there have been amazing advances in the treatment of pneumonia, but in each disease prophylactic immunization is still in the experimental stage, certainly not ready for widespread application. In-

fluenza derives its evil reputation as a major threat chiefly by reason of the complicating pneumonia. Other pneumonias, especially pneumococcic pneumonias, are very largely amenable to successful treatment with some of the newer chemotherapeutic agents, but so far as I know, these drugs have not been used sufficiently in true influenzal pneumonias to make possible the appraisal of their value in this condition. This will show you that I believe influenzal pneumonia to be not merely a complication due to other organisms such as streptococci, pneumococci, and the influenza bacillus, but regard it as a separate entity due to the influenza virus or some other, as yet undiscovered, etiologic agent.

I suppose one of the most outstanding problems, especially in the South, in war time as in peace, is malaria control, but because this disease always is with us it does not attract our attention as some exotic but less important one might. While chemoprophylaxis has a limited part in malaria control it is not often practicable under civilian conditions. Prevention of malaria is a problem not often dealt with directly by the individual physician, excepting, of course, the therapeutic features. Prophylaxis concerns chiefly the sanitary engineer, the entomologist and other specialists found in our local, state, and federal health services.

The most important communicable diseases from the point of view of disability are those of the venereal group. I shall not consider them in detail, not because I regard them as outside the field of this discussion, but because I think they are being dealt with as satisfactorily as our social and economic system permits. The one message I would carry to my brother physician is this, if you are not yourself interested in, or in a position to handle, venereal diseases from the clinical or public health point of view, you should turn cases over to established public health agencies. I mean here especially, that if you are not prepared to undertake tracing of infections to sources, case finding of contacts, and case holding of those under treatment, you should not

simply ignore these features but place them in the hands of agencies in a position to deal with them. There are now nearly everywhere adequate public facilities for the rendering of such service as well as for the curative treatment necessary. The attitude of the leaders of our profession on the public health aspects of venereal diseases is well illustrated by the following:⁴

In 1876 J. Marion Sims, then President of the American Medical Association said, "So far as the well-being of the human race is concerned, I look upon the subject of syphilis as the great question of the day . . . and we must deal with it precisely as we deal with other great evils that affect the general health of the people." In 1942 Lاهی, today President of the American Medical Association, from whose paper in a government publication (*Venereal Disease Information*, 23:85) the above is quoted, has the following to say:

"As private physicians, our responsibilities are of a dual character:

"(1) We must be prepared to play our part in the medical control of venereal disease in our offices and in the public treatment centers, and in our professional capacities we should confine ourselves to the medical aspects of the situation.

"(2) As responsible citizens in a democratic community—and as citizens with certain special experiences—we must play our part in the total community attack on venereal disease and on the conditions which foster its maintenance and spread.

"These are obligations which fall to us as practitioners of medicine—obligations not born of war, but accentuated by war; obligations that will remain through war and through peace until the battle against venereal disease is finally won."

Our methods of communicable disease control and our health measures in general have been built up in very favorable times—times of peace and reasonably liberal economic conditions, individual and collective. Now the margin between health security and health deterioration may be a narrower one than we think and it is conceivable that if National reverses should occur in this

war there might be such changes in the health conditions as would throw us back many years, perhaps many decades; then, of course, the misery flowing out of adverse health conditions would be only one feature of a general demoralization of a people who have encountered military reverses.

Even with conditions as they are the suggestion has been made that the long continued gratifying decline in tuberculosis mortality, a reduction that never has been fully accounted for, may be about to be replaced by a rise in the morbidity and mortality from this disease.⁵

Bacterial warfare is hardly part of my assignment but it ought to be mentioned since it is a subject that has been somewhat in the news recently. It has been suggested that enemy nations might try to produce epidemic diseases among our civilian population by distributing bacteria or viruses causing infectious diseases of men or animals. This subject came up in World War I and at that time I had to spend some time trying to run down clues. Needless to say, hardly any of these developed into any tangible leads. One scare was that surgical dressings were alleged to be contaminated with tetanus. Rather to our surprise we found that one type of surgical dressing actually was contaminated with the tetanus spores, but clearly not with any intent to damage our population or our armed forces. I do not regard it as at all likely that warfare is to be conducted with infectious agents, not because it is forbidden by international conventions but simply because I cannot see how it likely could be made an effective weapon so far as human diseases are concerned. Conceivably, but improbably, localized outbreaks of typhoid, cholera or plague or some other infection might be started but it seems unlikely that they could become extensive enough to be of military importance. Certainly I would not be willing to advocate immunization against any of these that have been mentioned on account of any possible threat of the kind I am discussing and the same may be said of any other diseases I can think of. As recently as the March 9, 1942 issue of *Time* maga-

zine there was published a report that one of our enemy nations had tried to introduce plague infection into the Chinese civilian population of one of the north China provinces by dropping the germs from airplanes. I mention it for what you may think it is worth.

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THE DEFENSE OF CHILDREN

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For the first time in the history of our country we are faced with the problem of invasion of our land by enemies using a weapon of destruction which not only involves the military but the civilian population. In the past and until a short time ago the idea of total war injuring and killing women, children, handicapped and old people of the United States seemed a remote possibility. That that is now possible and probable makes it imperative to make immediate plans for the care of these groups of people.

We profit by the experience of Great Britain. In initial planning and retrospective improvement the British government had certain well defined principles and depended for their execution upon designated public and volunteer groups. The basic policy was dispersal of the non-essential population except for their protection. This evacuation was not compulsory except for military, industrial or other special reasons. But evacuation necessitated compulsory billeting of so-called priority classes in selected reception areas. These priority

classes were school children, children under school age with their mothers, pregnant women, blind persons, and handicapped children. National registration was necessary for identification and keeping track of this mobile population. At the time of evacuation special means of identification for unaccompanied children were used. For mass evacuation transportation was arranged through the government. The initial cost was defrayed by the government but clothing and maintenance were parental responsibilities. Medical care was a primary concern. Examinations before evacuation with special recommendations to go with the child were found necessary after unfortunate experiences with pediculi, impetigo and other skin diseases as well as behavior problems. Hospital and isolation facilities had to be maintained or established in both evacuation and reception areas. Only partial transfer of school nurses and doctors in evacuated areas to emergency services to leave a minimum for care of unevacuated children was necessary. Nursing or medical supervision en route was provided for each group of evacuees by assigned nurses or doctors. Groups of children were sent by classes to a given area under the care of a familiar teacher to prevent or alleviate homesickness and behavior problems. Public health services in the evacuation areas included assignment of extra personnel, medical arrangements for school children and mothers with young children, hospital accommodation for emergencies, minor illnesses, and infectious diseases, and care of difficult children. Maternity care was carried out under an extension of a well-established peacetime plan for midwife care, hospital care and medical consultation. Pregnant women were billeted in private homes near which they could receive regular prenatal care. Delivery whenever possible was done in the billeting home by a midwife. Otherwise, it was done by a midwife or doctor in a maternity home or hospital. Special arrangements for care for two to four weeks in special convalescent homes was usually necessary as mothers and newborns were too heavy a burden

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for billeting homes. For problems of maladjustment of urban children and adults in billeting homes continuous aid by medical and social agencies was essential. Trained social workers with volunteers conducted mothers clubs and nursery centers with occupational and recreational facilities. Communal bath houses and laundries, and weekend hostels for husbands and fathers were established. For children in billets three needs had to be met besides food and shelter; love, companionship, and recall of parental loyalties. The Ministry of Education faced a difficult problem. The original closure of schools and transfer of school buildings for other purposes left unevacuated children at large. School and school medical services had to be resumed in evacuated areas. Meanwhile schools in reception areas were overburdened by the influx of evacuated children. This was met by taking over extra quarters, transferring equipment from evacuated areas, doubling shifts and mutual collaboration between rural and city teachers. Blind persons and handicapped children were evacuated as groups to camps, country houses or residential nurseries. Communal feeding arrangements in evacuated areas were an outgrowth of a prior school meal program or were established for resident and evacuated children. Parents were allowed to take advantage of the arrangements at cost price.

Thus in general did Great Britain follow through with remarkable success a long term plan for dispersal and care of her priority classes. We realize our need for similar planning for voluntary evacuation of our non-essential civilians. Our problem is greater because of greater distances between cities and reception areas, and our inadequacy of maternity care and child health and welfare in towns and rural areas. We need federal, state and local cooperation for ways and means of evacuation of children.

From federal agencies we need:

1. Designation of danger and safe areas.
2. Authorization for registration and identification of priority classes.

3. Authorization for assistance from state and local officials for facilities in safe areas with regard to housing, health, medical care, social services, education and recreation.

4. Extension of child health and maternity services in rural areas.

5. Provision for adequate financial assistance in execution of plans.

From states and local agencies we need:

1. Inter and intrastate cooperation in reception of evacuees.

2. Provision for extension of educational facilities in safe areas.

3. Planning for community feeding, recreation, laundry and nursery centers.

4. Cooperation in extension of medical services and child guidance clinics.

5. Organization and training of volunteers for child welfare service.

To follow through these plans we must realize the need for the protection and welfare of our children. We must organize under adequate leadership and accept our individual and group responsibilities. Large numbers of our children will be removed voluntarily from danger areas to relatives and friends in safe areas. But that will not relieve us of responsibility for continuing their health and educational supervision nor of responsibility for many families without such resources in safe areas.

Besides making provision for evacuation we must protect our children under bombardment. Civilian defense provisions include air-raid precautions in schools, construction and equipment of shelters, gas-masks, routine and emergency medical care, rest centers for bombed-out families, refuge for young children separated from parents, and communal feeding facilities.

In time of air-raid, children in school are to be taken by the teacher in groups of 50 or less to shelters or near-by houses. Teachers are advised in protection of windows, ventilation, sanitation, in protection against fire and gas, and provided with emergency rations. Subterranean or reinforced concrete shelters are to be equipped with sleeping accommodations, sanitary arrange-

ments, first-aid care, canteens, and personnel for assistance with children. Rest centers for bombed-out families are to provide accommodations for children and adults until evacuation is arranged. Bombed-out people and evacuees en route must be fed from community kitchens. Special gas-masks for children one to five years of age and respirator bags for infants are necessary. Parents are to be instructed in their use, and to accustom children to them. At home in time of air-raid infants and children are put in the selected, safest possible place. That refuge should have pillows or mattresses, blankets, diapers, gas-masks, first aid kit, playthings, water, milk and other foods, cotton wool for the ears of adults and children, and some make-shift sanitary arrangements. Outdoors a child is placed prone beside a wall or in a ditch on coat or cushion and covered with a coat. The parent should lie down beside the child. Above all a calm attitude in parent or attendant is the primary essential.

In Louisiana and New Orleans we recognize certain special difficulties for the protection of civilians. Due to terrain, subterranean shelters cannot be made available but reinforced concrete shelters can be constructed and are supposedly safe except against direct hits by bombs. Our country and city are vulnerable to flood which may endanger life and health by contaminating the water supply and by disrupting sewage disposal. Should gas be used, low-lying land is extremely vulnerable. Also our evacuation arrangements and air-raid precautions must be two-fold to care for both white and colored races.

Some idea of the number of persons in the priority classes for this Parish is given by the following data:

Statistics on Orleans Parish

Number of Children in New Orleans
Mid-year 1942.

Under 6	38,002
6-18	108,496
Handicapped Children	269

Births in Orleans Parish

January-December 1941	13,264
January-April 15, 1942	3,598
Average monthly births	1,088

Blind—No data available

The social agencies in this area exclusive of hospitals can be enumerated and roughly classified as follows:

Available Organizations and Welfare Agencies in Louisiana, Orleans Parish and New Orleans

	White	White and Colored	Colored
National	4	11	3
State	11	27	3
Parish	6	8	3
City	7	3	1
Religious	24	9	10

Total for colored and white—130.

A canvass should determine the availability of each organization for participation in defense, in evacuation planning and in reception arrangements. A register of the number and qualifications of the personnel would facilitate planning for their use as individuals or as units in emergency.

In conclusion, for the defense of our children we recommend immediate planning for evacuation to safe areas, for protection of children in danger zones, and for adequate care in both these areas. We feel that we can undertake these without panic and with the determination to fight on the home front as valiantly as do our soldiers on the military front.

DISCUSSION

Dr. W. R. Mathews (Shreveport): I should like to ask Dr. McCoy if he has an idea why there is a difference in the value of vaccination against typhoid fever in military personnel and the general public.

Dr. George W. McCoy (New Orleans): I have been asked that question many times. I have no explanation for it. Vaccination of military personnel seems to have been almost 100 per cent effective. With civilians it has been very much less effective.

Dr. R. T. Lucas (Shreveport): In answer to the question why the use of vaccines is not more effective, may I call your attention to one factor

in some cases. As most of you know, vaccines are very perishable and lose their potency rapidly unless kept properly refrigerated. Sometimes we have been careless and have used a vaccine that is not potent because it has not been kept properly refrigerated. This rapid loss of potency, if not properly refrigerated, should always be borne in mind in the use of vaccines, sera, and other biologicals.

Dr. Clyde Brooks (New Orleans): Touching the same point: I have found that the vaccine made and put out by the U. S. Army is strong, and that made and put out by civilian manufacturers is relatively weak.

Dr. George W. McCoy: That may be possible.

Dr. George H. Hauser (New Orleans): I would like to say a few words concerning the question just asked. The typhoid vaccine as manufactured by the Louisiana State Board of Health is prepared according to the technic as outlined by the United States Army Medical School. The use of the old Rawling attenuated strain has been discontinued, and in its place, the highly virulent Panama No. 57 strain, furnished by the Army Medical School, is now being used. This new vaccine

gives higher immunity for a longer period of time.

Dr. C. A. Stewart (New Orleans): When typhoid occurs in immunized patients is it because the potency of the vaccine varies?

Dr. George W. McCoy: Two or three years ago there was a severe outbreak in the bayou district of about 100 cases in a short period. Many of them had been vaccinated and some had not been vaccinated. There were fatalities among those vaccinated, as well as among those not vaccinated.

Dr. W. R. Mathews: I wonder if the difference in the value of typhoid vaccination in the two groups could not be explained in part, at least, on the basis of sanitation. Under ordinary circumstances military circles have the advantage of good sanitation. The civilian population contracting typhoid fever, on the other hand, usually live under very poor sanitary conditions. We know that typhoid vaccination at its best is only relatively successful in protecting against the disease. Therefore, it would not be surprising if individuals without any sanitary protection should ingest sufficiently large doses of the bacteria to produce the disease in spite of vaccination.

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THE CHARITY HOSPITAL SITUATION

The medical profession of the city and state has been dumfounded by the actions which apparently will see the closure of the Charity Hospital. It is almost unbelievable that this institution, which has been a refuge for the sick, ailing and injured for nearly 200 years, should close its doors. It is inconceivable that an institution which ranks as one of the great hospitals of the country should suddenly cease to function. When it is realized that there are more women delivered in the wards of Charity Hos-

pital than in any other hospital in the country, that the number of patients admitted ranks third, with only two very large metropolitan centers, New York and Chicago, having more patients in their municipal institutions than Charity Hospital, when it is appreciated that the outpatient clinics treat more patients than any other hospital in the country, it seems impossible that the eleemosynary activities of this institution should suddenly cease. There must have been a tremendous need for the services of the institution or it would not have obtained the size that it now is. Certainly this need cannot abruptly stop; the people of Louisiana suddenly will no longer be sick or require operations or need treatment. If the Charity Hospital does close its doors on September first as is now threatened, where will the poor, the sick, the indigent get medical service? Certainly there is no hospital in the city that can begin to supply the needed services.

The Charity Hospital is not only used by the citizens of New Orleans but is used by the citizens of the entire state. The problem cases, the patients who require special forms of treatment, the people of Louisiana who need the services of skilled, trained specialists gravitate to New Orleans. At the smaller state institutions it is impossible to supply all the equipment, personnel and special services which make the cost of the Charity Hospital immeasurably greater than the ordinary institution, but these services must and should be provided.

Charity Hospital not only has the function of taking care of the indigent sick of Louisiana but it also provides a tremendous service to medical education and medical education nowadays connotes service to the country. There are being trained in the Charity Hospital approximately 600 young doctors and doctors-to-be who will go into the armed services when they have completed their training. Suddenly to stop this very necessary and much needed supply of physicians to the army and navy would not only be unpatriotic but would be almost equivalent to the action of a fifth columnist. Furthermore, the Charity Hospital has con-

tracted with the young interns and residents to give them training in return for the services they render in the hospital and this training will be very much needed in national defense.

Every public minded citizen, every individual with a thought to the underprivileged, and most decidedly every physician hopes and trusts and probably prays that the Charity Hospital will not be closed and that ways and means will be found to maintain the medical services rendered the needy by the state, by the unpaid medical staff, by the Sisters of Charity and by their nursing staff.

INTESTINAL ANTIBACTERIAL

Now comes the development of another sulfonamide, succinylsulfathiazole, a derivative of sulfathiazole, which is claimed to exert antibacterial activity on the flora of the intestinal tract. Studies show that it is only slightly soluble in water, poorly absorbed from the intestinal tract and that it produces a marked reduction in the colon bacilli and related organisms, exerts some antibacterial action on the various strains of the dysentery bacilli and inhibits the growth of the anaerobic bacteria.

The use of this drug in 100 patients is reported by Poth and Knotts.¹ Because a high concentration of the drug can be secured in the gastrointestinal tract with low blood levels these authors recommend its use "in the preoperative preparation and the postoperative control and treatment of patients requiring surgical procedures on the intestinal tract." In this manner the dangers of peritonitis are reduced and the postoperative course is smoother, with less distention and gas pains. They treated surgical cases including ulcerating carcinoma of the rectum, carcinoma of the colon, fecal fistulae, ileostomy, tumor of the cecum and ileosigmoidostomy.

The dosage recommended is 0.25 gm. per kilo of body weight with a maintenance dose of 0.25 gm. per kilo daily, divided into six equal portions and given every four hours. From one to seven days are usually required

for preparation. Postoperatively the drug should be given as soon as the patient is able to take water without nausea, 0.25 gm. per kilo daily as before operation. This is continued for from one to two weeks. While its toxicity is apparently very low, frequent blood level determinations and urine examinations should be done to control its effects.

Further experience with the drug may verify these therapeutic successes and indicate the increased usefulness of the drug in intestinal infections of various types as well.

STERNAL ROUTE FOR FLUIDS

In this day and time and especially in the surgical emergencies of modern warfare, the parenteral administration of fluids is a most important, valuable and often life-saving procedure.

Recently, Papper and Rovenstine¹ have pointed out the usefulness of the sternal marrow cavity as a route for the administration of whole blood transfusions, plasma, dextrose and saline solutions. Several years ago Tocantins et al. described the experiments showing that the sternal bone marrow absorbs fluids ordinarily given intravenously with equal efficiency. Under certain circumstances this route might be extremely useful. When veins are inaccessible because of injuries or burns over the accessible veins, with collapsed veins, generalized edema, or when thrombosis of accessible veins has occurred because of previous repeated intravenous injections, such a procedure is one well worth remembering and trying.

The technic described by these authors is not difficult. They recommend the use of a special needle, about 6 cm. in length with a stylet. Using a local anesthetic in the skin and the periosteum of the bone the puncture is made over the lower portion of the manubrium or the upper part of the body of the sternum. The needle is inserted in the midline, at about a 30 degree angle with the anterior chest wall, and is pushed into the sternal marrow cavity with firm pressure

1. Poth, Edgar J., and Knotts, F. Louis: The clinical use of succinylsulfathiazole, *Arch. Surg.*, 44:208, 1942.

1. Papper, E. M., and Rovenstine, E. A.: Utility of marrow cavity of sternum for parenteral fluid therapy, *War Medicine*, 2:277, 1942.

to pierce the outer table. The stylet is removed, and aspiration of marrow blood shows its correct position. The intravenous apparatus is then connected and the fluid administered as by the intravenous route.

MORTALITY AFTER CORONARY OCCLUSION

Anyone who has attempted to determine the prognosis in any group of patients with acute coronary occlusion and myocardial infarction knows how very difficult the problem is. Often when one least expects it and when the patient is doing well by all signs and symptoms one has at his disposal, death occurs suddenly and unexpectedly. Various studies have been made in order to establish signs that might be helpful in judging the prognosis. Among these unfavorable prognostic signs are unusually high fever, unusually high leukocyte count, marked fall in systolic blood pressure with low pulse pressure, tachycardia, and congestive failure. These indications of a poor prognosis are helpful, but there are no signs to assure us that the prognosis is good, and one must always fear the unexpected, especially in the first twelve to fourteen days following the acute episode.

In an attempt further to evaluate the factors that influence the immediate mortality, Woods and Barnes¹ studied 128 unselected patients. These figures are of considerable interest and throw additional light on the important problem.

Of these 128 patients, 60 died within six weeks of the acute attack and 68 were still living at the time of the report. The ratio of males to female was 5.4 to 1.

1. Woods, R. M., and Barnes, A. R.: Factors influencing immediate mortality from acute coronary occlusion, *Am. Heart J.*, 24:4, 1942.

It has often been stated that the prognosis is better in cases of posterior infarction than in those of anterior infarction. In this series there was no difference whatsoever, 42% of both types suffered immediate death and 58% were living.

The complications which occurred within the first six weeks in the whole group showed a relative incidence as follows: pulmonary congestion 33.3%, congested liver 15%, pulmonary infarcts 10%, cerebral thrombi 15%, pericarditis 10%, rupture of the heart 3.3%, and vascular occlusion of extremity 1.7%.

Cardiac irregularities occurred much more frequently in the patients who died. Sinus tachycardia occurred in 31.7% of those patients who died and in only 17.6% of those who survived. Ventricular prematurets occurred in 23.3% of the immediate deaths as contrasted with 11.2% in survivors. Frequent ventricular prematurets, occurring every two to ten beats, were considered a very serious prognostic sign.

Age is the most important factor influencing the immediate mortality. In those patients 60 years of age or older the immediate mortality was 64.5%, while it was only 36.2% before 60 years of age.

The mortality rate was also higher in females than males, 75% in females as compared with 41.7% for males. Myocardial failure was also another important factor. The importance of ventricular fibrillation is well understood and frequent ventricular prematurets are always likely to result in ventricular tachycardia or ventricular fibrillation.

Massive pulmonary emboli caused death in six of the 60 patients who died within the first six weeks.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

AUGUST CALENDAR OF MEETINGS

- August 3. Orleans Parish Medical Society, Board of Directors, 8 p. m.
- August 4. Eye, Ear, Nose and Throat Staff, 8 p. m.
- August 5. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.

- August 6. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- Baptist Hospital, Executive Meeting, 8 p. m.
- August 12. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.

- August 17. Clinico-pathologic Conference, Baptist Hospital, 8 p. m.
- August 19. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.
- August 20. Clinico-pathologic Conference Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- August 26. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheatre, 1:30 p. m.
French Hospital Staff, 8 p. m.
- August 27. Clinico-pathologic Conference Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- August 28. L. S. U. Faculty Club, 8 p. m.
New Orleans Hospital and Dispensary for Women and Children Staff, 8 p. m.

During the month of July the Society held one regular scientific meeting. The program was as follows:

1. History of Yellow Fever in New Orleans, by Dr. Rudolph M. Landry.
2. Vitamin Deficiency States in Louisiana, by Dr. Robert Lowe.

Reports of Officers and Committees, Second Quarter 1942, were also read at this meeting.

NEWS ITEMS

Dr. Donovan C. Browne read a paper on Gastroscopic Changes in Tuberculosis—Experimental Studies, at a meeting of the American Gastro-Enterological Association held in conjunction with the A. M. A. meeting in Atlantic City, June 8-12.

Dr. Donovan C. Browne also attended the American Gastroscopic Club meeting in Atlantic City.

At a recent meeting of the Diocesan Council of Catholic Women the following physicians were elected to office: Dr. Ruth G. Aleman was appointed chairman of the legislative committee; Dr. Katherine Havard, chairman of the speakers' bureau, and Dr. Maud Loeber was named chairman of the health committee.

Dr. T. A. Watters was elected vice-chairman of the Section on Nervous and Mental Diseases of the A. M. A. at the recent meeting of the Association in Atlantic City.

The following physicians addressed the Catholic Nurses Guild at recent monthly meetings: Drs. E. A. Bertucci, L. S. Charbonnet, Jr., Henry D. Ogden, J. O. Weilbaeher, Jr., and Edwin L. Zander.

Edwin L. Zander, M. D., Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

NEW ORLEANS GYNECOLOGICAL AND OBSTETRICAL SOCIETY

At the recent quarterly meeting of the New Orleans Gynecological and Obstetrical Society held at Mercy Hospital, Dr. William F. Guerriero read a paper on "Syphilis and Pregnancy."

Subsequent to the scientific program, in accordance with a report of the Nominating Committee, the following officers were elected for the coming year: Dr. J. W. Reddoch, President; Dr. Earl C. Smith, First Vice-President; Dr. Eugene Countiss, Second Vice-President; Dr. E. L. Zander, Secretary; Dr. H. B. Alsobrook, Treasurer; Dr. Lucien A. LeDoux, additional member of the Board.

This meeting was presided over by Dr. Lucien A. LeDoux, the present President of the Society.

HOW TO PROTECT AGAINST GAS

"The following information on war gases is supplied for general publication because of the possibility that they may at some time be used by the enemy. If people will remember a few simple facts, they will have no unreasonable fear of this agent.

"I. War gases stay close to the ground, for they are heavier than air. To get out of gassed area, simply walk against the wind or go upstairs.

"II. Gas is irritating and annoying to the eyes, nose, lungs, or to the skin, but it is usually harmless if you do not become panicky but promptly leave the gas area and cleanse yourself. A soldier must put on a mask where it is necessary to remain in the contaminated area, but a civilian can go up on the second or third floor and literally ignore it if the windows are kept closed.

"III. If the gas should get on your skin, you can prevent it from doing much harm by sponging it off as quickly as possible with a piece of clothing, such as a handkerchief, and applying some neutralizing substance, followed by a thorough bath, preferably a shower, with common laundry soap and water.

"IV. If you are indoors, stay there with doors and windows closed, and go up to the second or third story. Stay out of basements. Turn off the air conditioning, and stop up fireplaces and any other large openings.

"V. Some gases are spread as oily droplets which blister and burn the skin and eyes. If you are outside when gas is used do not look up. Tear off a piece of clothing or use a handkerchief to blot any drops of liquid from your skin and throw the contaminated cloth away. Blot; do not rub, as rubbing will spread the liquid. Then go home, if it is nearby, or to the nearest place where you can wash immediately with soap and water and cleanse yourself in the following manner:

"1. Remove all outer clothing outside the house, since gas can be transmitted to others from contaminated clothing. Put it preferably in a covered garbage pail.

"2. Apply one of the following effective household remedies to the part of your skin that has been contaminated; Chlorox or similar household bleach (for mustard); peroxide of hydrogen (for Lewisite); paste or solution of baking soda if you have no peroxide or bleach. If you do not know the gas, use both peroxide and bleach. Keep bleach and peroxide out of the eyes. Do not waste time looking for these remedies; bathe immediately if they are not at hand.

"3. After entering the house, wash the bleach or peroxide from hands with laundry soap and water and then wash the face. Remove the underclothing, place it in a covered garbage pail, and enter the bathroom.

"4. Irrigate the eyes with large amounts of lukewarm 2 percent solution of baking soda (one tablespoonful to a quart of water), or else with plain water. Use an ordinary irrigating douche bag or an eye irrigator. If you do not have these, let plain warm water pour into the eyes from the shower, washing them thoroughly. Do not press or rub the eyes.

"5. Lastly, take a shower, using laundry soap and hot water.

"6. If the nose and throat feel irritated, wash them out also with baking soda solution.

"7. If your chest feels heavy and oppressed, if you have any trouble breathing, or if cigarette smoke becomes distasteful, lie down and stay perfectly still until a doctor sees you.

"8. If blisters develop, be careful not to break them and call a doctor.

"REMEMBER: Soldiers require gas masks because they must remain in the contaminated area. Civilians can get out of the gassed area or get above the level of the gas, where they do not need gas masks or protective clothing.

"Injured persons, who are gassed, require decontamination before they can be admitted to hospitals. All other civilians can best prevent any serious injury by promptly helping themselves in the manner outlined, using a kitchen or bathroom, laundry soap and water, and a few materials found in every household."

James M. Landis,
Director, Civilian Defense.

AMERICAN PHYSICIANS' ART ASSOCIATION

The fifth annual exhibition of the American Physicians' Art Association was held June 8-12, 1942, at Atlantic City, N. J., in Convention Hall, under the same roof with the American Medical Association.

This exhibition was enthusiastically acclaimed the most attractive one of the entire convention, as evidenced by the fact that the 40'x60' room was filled with visitors at all times. There were 350 original art works, a large number considering war time. Seventy-three prizes were awarded.

Under the new rules, no artist may receive more than one award in one year. No private or commercial prizes are permitted, all prizes being the Association's.

COURSE IN PHYSICAL THERAPY

"Columbia University announces that beginning September, 1942, a program of professional studies for the training of Physical Therapy technicians will be offered. This training and instruction will extend over a two-year period and has been organized in compliance with the requirements set down for such programs by the Council on Medical Education and Hospitals of the American Medical Association. The course is being set up in University Extension in close relationship with the College of Physicians and Surgeons of Columbia University, the Nursing Education and Health and Physical Education Departments of Teachers College. The clinical and laboratory instruction will be given at the Vanderbilt Clinic, Neurological Institute, Presbyterian Hospital and New York Orthopedic Dispensary and Hospital.

"Two years or 60 semester hours of college, including courses in Physics and Biology, shall be required, or graduation from an accredited School of Nursing or an accredited School of Physical Education.

"A certificate of Proficiency in Physical Therapy will be granted by Columbia University to those completing the course. Further information may be obtained by writing the Office of the Committee on Physical Therapy, Room 303B, School of Business, Columbia University, New York City."

William Benham Snow, M. D.,
Chairman, Advisory Committee
on Physical Education.

THE AMERICAN CONGRESS OF PHYSICAL THERAPY

Will hold its twenty-first annual scientific and clinical session September 9, 10, 11 and 12, 1942 inclusive, at the Hotel William Penn, Pittsburgh, Pa. The annual instruction course will be held from 8:00 to 10:30 a.m., and from 1:00 to 2 p.m. during the days of September 9, 10 and 11 and will include a round table discussion group from 9:00 to 10:30 a.m., Thursday, September 10. The scientific and clinical sessions will be given on the remaining portions of these days and Saturday morning. All of these sessions and the seminar will be open to the members of the regular medical profession and their qualified aids. For information concerning the seminar and program of the convention proper, address the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

THE AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians has announced its 27th Annual Session to be held in Philadelphia, Pa., April 13 to 16, inclusive, 1943. Heretofore, the College has held a five-day Session, but in the interest of conserving time and expense of its members, the program will be condensed into four days, Tuesday through Friday. Dr. James E. Paullin, Atlanta, as President of the College, will have charge of the program of General Sessions and Lectures. Dr. George Morris Piersol, Philadelphia, as General Chairman, will be responsible for the program of Hospital Clinics, Panel Discussions, local arrangements, entertainment, etc. The general management of the session and technical exhibits will be handled by the Executive Secretary, Mr. E. R. Loveland, 4200 Pine St., Philadelphia.

THE RICHMOND MEETING OF THE SOUTHERN MEDICAL ASSOCIATION

Since the press release by Mr. Joseph B. Eastman, Defense Transportation Director, the latter part of last week we have had letters and long distance telephone calls asking the status of our Richmond meeting. Our leading newspaper gave this press release under a Washington date line in this form: "The government asked Friday that all state and county fairs, non-essential conventions, meetings and group tours, be postponed until the war is over." Note this uses the term "non-essential conventions."

We hold that the Southern Medical Association meeting in November will be an essential convention, that in no sense does it come within the groups mentioned in the press release of Mr. Eastman as quoted above. It is our contention that our meeting can and will be of definite service to the government and to the people in these war times. It can be of service in the mobilization of physicians for war service as was our comparable meeting twenty-five years ago of service to World War I. There are many physicians in our territory who will have to broaden their civilian practice, who will have to do medical work they have not done in years. Our meeting will afford these physicians an opportunity to freshen up and this will mean a better service to the civilian population in these war times.

Until we have something more specific than we have now, until a responsible agency of the government specifically rules that ours is a non-essential convention and will not be entitled to transportation facilities, if transportation is rationed, we are going ahead with plans for a meeting. Just now we are not thinking of the possibility of not having our meeting in Richmond. We feel we should go ahead with perfecting the plans for it will be much easier to call the meeting off on short notice than it will be to get it ready on short notice. Let's be prepared.

C. P. Lorz, Jr.,
Secretary-Manager.

EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examination and review of case histories (Part I) for all candidates will be held in various cities of the United States and Canada on Saturday, February 13, 1943, at 2:00 p. m. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year. All applications must be in the office of the Secretary by November 16, 1942.

Effective this year there will be only one general classification of candidates, all now being required to have been out of medical school not less than eight years, having in that time completed an approved one year general rotating internship and at least three years of approved special formal training, or its equivalent, in the seven years following the interne year. This Board's requirements for internships and special training are similar to those of the American Medical Association since the Board and the A. M. A. are at present cooperating in a survey of acceptable institutions. All candidates must be full citizens of the United States or Canada before being eligible for admission to examinations.

NEWS ITEMS

Dr. Roy B. Harrison, of New Orleans, was recently elected a member of the National Board of Medical Examiners for a term of four years.

Dr. David E. Brown, of Ferriday, was recently appointed Director of the Louisiana State Board of Health to succeed Dr. C. L. Mengis.

THE CONWAY CHARITY HOSPITAL

It was announced on July 1, that Dr. C. P. Gray would become superintendent of the E. A. Conway Charity Hospital in Monroe, replacing Dr. D. T. Milam.

Assistant Surgeon James A. Finger is on duty at the U. S. Coast Guard Training Station, New Orleans, having been relieved from duty at the U. S. Marine Hospital on May 25.

Assistant Surgeon Bruce Cominole has proceeded to Boston for duty aboard the Coast Guard Cutter Tahoma.

Past Assistant Surgeon Samuel J. Nichamin has been relieved from duty in New Orleans and will proceed to Monroe, Louisiana, to establish headquarters for duty.

HEALTH OF NEW ORLEANS

The Bureau of the Census, U. S. Department of Commerce, has reported that for the week ending June 20, there were 160 deaths in the City of New Orleans, divided 105 white and 55 negro, and of this total there were eight children under one year of age, divided equally between the two races. The following week, which ended on June 27, there was a decrease in number of deaths in the city; 79 white deaths and 42 negro deaths being reported. This week there were nine deaths occurring in children under one year of age; seven white and two negro. The week ending July 4 showed an increase in number of deaths when 150 were reported. The deaths in the white population still outnumbered those in the negro indicated by 98 being reported for the former and 52 for the latter. There were 22 infant deaths this week, divided 12 white and 10 negro. One hundred and twenty-nine deaths, divided 88 white and 41 negro, were reported for the week ending July 11. There was quite a decrease in number of infant deaths this week; only three reported in the white race and one in the negro.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Section of Epidemiology of the Louisiana State Board of Health for the week which closed June 20 showed syphilis leading all other reportable diseases, with 627 cases listed during this particular week. Other diseases occurring in numbers greater than ten include 50 of gonorrhea, 25 of measles and 24

of pulmonary tuberculosis. There were five cases of diphtheria reported, one case from each of the following parishes: Acadia, Orleans, Madison, Richland and Winn. Natchitoches and Winn Parishes each reported one case of malaria; Rapides and Vermilion one case of meningococcus meningitis; Jefferson and Lafayette one case of poliomyelitis; East Baton Rouge, Jefferson and Orleans one case of scarlet fever; Jefferson, Lafourche, Orleans and Vermilion one case of typhus fever; and Lafayette and Natchitoches one case of undulant fever. Two cases of typhoid fever were reported from East Baton Rouge and St. Mary Parishes, and Madison, Orleans, and Rapides each reported one. There were five cases of whooping cough in Orleans Parish and four in St. Mary Parish. Syphilis again led all diseases reported for the week ending June 27 when 307 cases were reported. Gonorrhea followed with 58 cases and there were reported 54 of measles, 44 of pulmonary tuberculosis, 41 of whooping cough, 26 of bacillary dysentery, 17 of malaria, 13 of mumps, and 12 of septic sore throat. Of the whooping cough cases reported, 30 were from West Carroll Parish, five from Jackson, three from Orleans, two from Caddo and one from St. James. There were seven cases of diphtheria reported; one each from Acadia, Caddo, Orleans, Vernon and Vermilion Parishes, and two from Rapides. One case of meningococcus meningitis was reported in Orleans Parish and one case of poliomyelitis from Caddo, Orleans, Sabine, Vernon and Washington and two from Rapides. Jackson, Orleans and St. Tammany Parishes each reported one case of undulant fever; Bienville and Caddo, one of typhoid fever and Washington two of typhoid fever. Scarlet fever was reported by three parishes; Jackson two cases, Orleans one and Vernon one, and one case of paratyphoid fever was reported by Orleans and St. Landry Parishes. There was a decrease in the number of cases of syphilis for the week ending July 4; 223 cases being reported this week. Other diseases reported by figures larger than ten were as follows: 21 cases of gonorrhea, 15 of measles, 17 of pulmonary tuberculosis, and 11 of typhoid fever. There was only one case of diphtheria reported; one case of meningococcus meningitis; and one of paratyphoid fever; all occurring in Orleans Parish. Concordia and East Baton Rouge Parishes each reported one case of poliomyelitis, and East Baton Rouge, Jackson, Lafourche and Orleans each reported one case of scarlet fever. The typhoid fever cases were scattered throughout the state, there being one reported by East Baton Rouge, two by East Carroll, one by Iberville, two by Jefferson, three by Orleans, one by Richland, and one by Washington. The only case of typhus fever reported was from Jefferson Parish. Malaria was reported by three parishes; Jackson eight, Orleans one, and St. Tammany one. The report for the week ending July 11 showed an increase

of 110 cases of syphilis, a total of 333 being reported. There were 91 cases of gonorrhea, 33 of pulmonary tuberculosis, 24 of measles, 23 of typhoid fever, and 17 of mumps. The typhoid fever cases were reported from 12 parishes; Bienville one, Calcasieu one, DeSoto three, East Baton Rouge one, Jackson one, Madison one, Morehouse three, Ouachita two, Rapides one, Richland two, Vermilion two and West Carroll five. One case of meningococcus meningitis was reported from Rapides; one case of paratyphoid fever from Calcasieu; and one case of poliomyelitis from Ouachita.

There was one case of scarlet fever reported from each of the following parishes: Iberville, Orleans, and Sabine. Five cases of malaria were reported by Ouachita Parish and one by Rapides. Diphtheria was reported by Jefferson Davis, Orleans and Rapides Parishes; the first having two cases and the other two parishes having one each. Orleans Parish reported two cases of typhus fever and Calcasieu and Rapides each reported one. Nine cases of whooping cough were reported this week; five from Jefferson Parish, three from Orleans, and one from East Baton Rouge.

BOOK REVIEWS

Management of the Sick Infant and Child: By Langley Porter, B.S., M.D., M.R.C.S. (Eng.), L.R.C.P. (Lond.) and William Carter, M.D. 6th rev. ed. St. Louis, C. V. Mosby Co., 1942. Pp. 977, illus. Price \$11.50.

This volume is more detailed in description of disease than the *Compleat Pediatrician*, but not as complete as the authorities Holt, Mitchell or Brenemann. Part III on Methods, on the other hand, is most detailed, more descriptive and helpful than in any other volume the reviewer knows. The pictures showing the actual way of doing things, diets and prescriptions, should prove of great value to anyone interested in pediatrics.

SUZANNE SCHAEFER, M. D.

Bacillary and Rickettsial Infections, Acute and Chronic, A Textbook. Black Death to White Plague: By William H. Holmes, New York, The Macmillan Company, 1940. 676 pp. Price \$6.00.

Although this book is titled "A Textbook", it is not a conventional type of text. Rather, it appears to be a somewhat edited series of lectures dealing with the subject of certain bacillary and rickettsial diseases. This method of writing makes a very readable book, especially since the subject matter is not limited to epidemiology, etiology, symptoms, signs, and treatment. In addition it covers the history of the diseases, short discussions of the derivation of terms, adequate quotations from historically significant original articles, and interesting biographic notes on men who played a part in the development of knowledge of these diseases. This is particularly valuable in case of the more unusual diseases such as cholera, plague, typhus, tsutsugamuchi fever, and leprosy.

The book can be recommended for its educational qualities because of the large amount of "background" material. As for the "practical" data presented, they are adequate but not detailed. For this reason it cannot be considered as a reference book for clarifying deviations from the average in the individual case. Chapter 36, covering anthrax, glanders, erysipeloid, fusospirochetosis, and oroya fever, is entirely too brief to fit in

well with the rest of the book. It reminds the reader of a lecturer who has overstaid his hour and has to rush to finish.

Certain criticisms of format may be justified. The bibliographies are not consistent. Some references occur as footnotes, and the rest at the end of the chapters. Furthermore, the marginal notes take up space that could better be utilized otherwise. They add nothing that could not be briefly covered in the text.

ROBERT C. LOWE, M. D.

Brucellosis (Undulant Fever). Clinical and Sub-clinical: By Harold J. Harris, M. D. New York, Paul B. Hoeber, Inc., 1941. Pp. 286, illus. Price \$5.50.

This book, written by one keenly interested in the diagnosis and treatment of brucellosis, represents an attempt to bring together the important facts in the handling of patients with this disease. The author stresses clinical aspects and illustrates his points with numerous cases drawn from his own experience. It is unfortunate that he does not clearly differentiate the symptoms due to brucellosis from those incidental to the disease. Emphasis is placed on the chronic stage of the disease, which is indeed its most neglected aspect. Details of diagnostic procedures, with their interpretation, include not only the clinical history and findings, but the various important laboratory procedures, such as culture of the organisms, agglutination and skin tests, and the opsonocytotoxic index. Yet at times the author strays from these procedures in doubtful cases and depends upon the therapeutic test with brucella vaccine.

A discussion of the various forms of treatment describes, in a large part, the author's own experience, but the literature is called upon extensively for evaluation of the procedures. Stress is laid on vaccine therapy in the chronic stages of the disease.

Chapters on epidemiology and on public health and medicolegal aspects are included.

W. A. SODEMAN, M. D.

The Treatment of Burns: By Henry N. Harkins, M.S., M.D., Ph.D., F.A.C.S. Springfield, Ill. Chas. C. Thomas Co., 1942. Pp. 457, illus. Price, \$6.50.

After carefully reading this volume, on this important and rather timely subject, the reviewer was especially impressed by the thoroughness with which the author has covered the subject of burns. Although the title might give the impression that this is a monograph dealing only with the therapy of burns, the author has likewise very properly included all other phases of this subject as well. The result, in the writer's opinion, is a book on burns which is perhaps the most complete and comprehensive volume on this subject thus far written.

The review of 1320 references, bringing the bibliography up to November 1, 1941, will give the reader some idea of the author's enormous undertaking as well as the completeness of the subjects covered. Accordingly, this thoroughness makes this volume not only one of great value to the clinician, but likewise to the investigator on burns; and to the experimentalist and biochemist as well. Each will find, concisely considered, those phases, and especially those problems, in which he is particularly interested. A glance at the bibliography shows that the author's complete review of the literature covers every conceivable phase of burns.

The author divides his book into four parts. The first of these deals with "The Burn and its Effects." Part two covers every angle of the subject of "Treatment." The third part rather thoroughly considers "Special Burns"; and a "Practical Outline of Burn Treatment" constitutes the fourth and concluding part of the volume.

A sufficient number of tables, diagrams and photographs help enhance the value of this contribution. The reviewer feels that this book will serve as a valuable reference work on the subject of burns for many years.

FRANK L. LORIA, M. D.

The Prevention of Deformity in Childhood: By Richard Beverly Raney, B.A., M.D. in collaboration with Alfred Rives Shands, Jr., B.A., M.D., Elyria, Ohio, National Society for Crippled Children in the United States of America, Inc. 1941. Pp. 188, illus. Price \$1.00.

"Often the observance of simple preventive measures will forestall serious deformities, while neglect of these same measures, through ignorance or other causes, will not only allow the deformities to develop but may allow them to become so advanced that their subsequent correction becomes impossible. It is therefore important that those who first see the affected children should possess a knowledge of preventive treatment. In most cases these individuals are the family doctors, the welfare workers, or the public health nurses." In this passage in the preface Dr. Raney has pre-

sented the theme of this useful booklet. This carefully planned primer is, therefore, written for family doctors, welfare workers, public health nurses and workers in organizations for the care and treatment of crippled children.

A short section at the beginning of the book is devoted to the definition and description of the commoner groups of crippling conditions with a few words on the prevention of each of these. The commoner deformities of the upper extremity have been described and illustrated. The principles of treatment for each condition are outlined but emphasis is placed upon preventive measures. In the same way, deformities of the lower extremity and trunk are discussed. As explained in the preface, the illustrations are drawn from various sources. They are simple line drawings which make possible adequate visualization of the condition described.

The primer is so well designed and meets such a prevalent need that one hesitates to offer any criticism. It is probable, however, that in subsequent editions the authors will want to introduce some comments on the advantages of the Kenny treatment in the management of the early stages of infantile paralysis as a means of preventing respiratory paralysis and some of the worst contractures. There is such a tremendous field for preventive and corrective measures of foot defects and postural deviations particularly during preparatory school and college years that it would be desirous to emphasize these possibilities a great deal more than has been done in this small primer. However, the absence of these from the present edition does not seriously diminish its value to lay and welfare workers to whom it is heartily recommended.

GUY A. CALDWELL, M. D.

Foundations for a Science of Personality: By Andras Angyal, M.D., Ph.D. New York, The Commonwealth Fund, 1941. Pp. 398. Price, \$2.25.

In this book the concept of "the personality as a whole" has been extended to include the individual and the environment together as a unitary process (the process of living) rather than as two interacting factors. The trend of this unitary process is both towards self-expansion of the individual, with a tendency toward acquisition of greater influence over the events of his particular milieu, and towards conformity and oneness with such "superindividual wholes" as society and culture.

Use is made of Gestalt psychology in developing the author's thesis; and he draws upon psychology, logic, Lewinian psychology, psychiatry, philosophy, biology, and Freudian concepts in the construction of his holistic theory of personality.

New concepts are applied to "the organism as a whole" and to the problem of personality integration.

The book should prove of interest to the worker in the field of personality problems, whether his approach be from the psychiatric, psychologic, sociologic or biologic point of view.

T. A. WATTERS, M. D.

The Avitaminoses, the Chemical, Clinical, and Pathological Aspects of the Vitamin Deficiency Diseases: By Walter H. Eddy, Ph.D. and Gilbert Dalldorf, M.D. 2d ed. Baltimore, The Williams and Wilkins Company, 1941. Pp. 519. Price, \$4.50.

In this day of rapid advances in all aspects of our knowledge of the vitamins it is a practical necessity to re-edit such a volume as this frequently. In this second edition of "The Avitaminoses" much has been added in the way of proved material. Little speculation enters into the text. The characteristic which might be judged inadequate in the book is the clinical discussion including diagnosis and treatment. One might suggest that the short appendix of methods for laboratory estimation of vitamin deficiency could better be incorporated in the text under diagnosis. More emphasis on the interpretation and limitation of laboratory findings would be of value.

The bibliographies at the end of the chapters are pertinent, and consist of the more significant references. They make no pretense of being complete.

The book is a worth while one for those in practice interested in keeping up with the chemical and pathologic knowledge of the subject treated.

ROBERT C. LOWE, M. D.

Arthritis and Allied Conditions: By Bernard I. Comroe, A.B., M.D., F.A.C.P. Philadelphia, Lea & Febiger, 1941. Pp. 878. Price, \$9.00.

The author is to be congratulated on the value of the practical and scientific material presented in this treatise of arthritis. Seldom does one see such voluminous amount of important facts presented in a form easily assimilated by the student, the specialist, or general practitioner. The many beautiful illustrations add accuracy to the treatise. Of special interest are the many new chapters dealing with allied arthritic subjects brought minutely to the present day streamlined conception of these diseases. A complete reference list follows each chapter which will furnish sufficient material for use of any investigator. The placing of a synopsis of the diagnosis, treatment and so on, of any special disease discussed, is very unique, and puts in a compact form the salient features desirable in all cases.

This should be read by all physicians, whether specialist, student, or general practitioner. The reviewer is sure this second edition will prove even more popular than the first.

P. T. TALBOT, M. D.

Nasal Sinuses: An Anatomic and Clinical Consideration: By O. E. Van Aylea, M.D., Baltimore, Williams and Wilkins Company, 1942. Price, \$6.50.

Van Aylea has presented this subject with considerable brevity but also with remarkable clarity. His literary style makes it a pleasure to read this book from cover to cover. His ample and critical clinical experience has been built on thorough familiarity with the anatomy and physiology of the sinuses.

A bibliography is given at the end of each chapter and the references are on the whole, to sources which are readily available to the reader in this country. This is a valuable feature.

The author decries unnecessarily radical sinus surgery such as ablation of all ethmoid cells when a limited infection exists.

He mentions infraction of the middle turbinate as a highly valuable, often neglected, simple office procedure.

The illustrations are clear and informative.

The book is heartily recommended to both the student and the specialist.

H. L. KEARNEY, M. D.

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ETHER AS THE ANESTHETIC OF CHOICE IN PROLONGED OPERATIONS*

JOSEPH A. DANNA, M. D.†
New Orleans

When I first came into the field of medicine chloroform was used in New Orleans as the general anesthetic for all operations. Where for any reason we were afraid to give chloroform we had only local anesthesia to fall back on. We learned by experience that the patient had to be deeply anesthetized before the operation could be begun, otherwise not only would shock ensue but the patient would struggle, and this degree of anesthesia had to be continued until the operation was finished.

In 1905 I visited the larger medical centers in the country with the purpose of finding out, if possible, why it was that we in New Orleans were still using chloroform while in the North everybody was using ether. I found that they did not know how to give chloroform and we did not know how to give ether. I came back and showed the interns at Charity Hospital how to give ether as it was being done at the Mayo Clinic, and ether supplanted chloroform from that time on. We still felt that it was necessary to put a patient deeply under before beginning an operation and to keep him deeply under until the end of the operation, though we later found that the anesthesia might be stopped for five to ten minutes or

more before the end of the operation without the patient struggling as in chloroform anesthesia. Nevertheless a patient who has had a prolonged ether anesthesia, of say two hours or more, reaches his room in a comatose state from which he does not recover for anywhere from two to six hours and when he does he will have nausea and vomiting for 24 hours or more and when he gets over his experience will vow never to take ether again as an anesthetic. The percentage of complications following such anesthesia is quite high.

On a certain occasion after I had removed the greater portion of the lower jaw as a sequestrum, walking back into the operating room after washing my hands I noticed a swelling under the chin which indicated that there was a pocket which required external drainage. The ether anesthetic had been stopped for some time so I had the attendants hold him firmly while I made a quick incision, expecting the patient to try to jump off the table, but he did not budge. I was greatly impressed with this fact but attached no particular importance to it until some years afterward when I had occasion to explore the right cerebral cortex, turning down an osteoplastic flap and opening the dura. I remember feeling that I wanted to be sure that this patient did not get too much anesthetic, so I instructed the anesthetist, who was giving drop ether on an open mask, to get the patient completely under surgically and then to stop the anesthetic until she heard further from me. I got busy with my operation and forgot all about the anesthetic and when I got through I found out that I had been working for over two hours and that the patient had received no more anes-

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 28, 1942.

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thetia after once being deeply anesthetized. I began to feel then that there must be something different about ether, and now and then instructed the anesthetist to stop the anesthetic sometime before the end of the operation. More recently I have been making it a rule in operations that I expected to last for much more than an hour to have the anesthetic discontinued after giving it for 45 minutes or one hour. I found that we could work for at least another hour without difficulty. Still more recently I cut the period of anesthesia after the operation was started to 20 minutes and later again to 15 minutes, and I found that we could still continue to operate for an hour or more after the anesthetic had been stopped. I further found that we could continue to operate while the patient recovered consciousness to the extent of being able to converse with the operator or the assistants during the operation.

TECHNIC

The ether is administered on the open cone in the usual way, deep surgical anesthesia induced and maintained during the period of administration. In patients who object to ether, with or without their knowledge ethylene has been given till the patient becomes unconscious, then the ether started. The mask has in some instances been left on the patient's face, in others removed.

I am submitting a table of ten recent cases.

Patient 1 cried "That hurts" as the last skin suture was inserted.

Patient 3 began to move and anesthetist insisted on giving her five minutes additional anesthetic.

Patient 6 was similarly given ten minutes more after it had been stopped.

Patient 7, who had a large incisional hernia following cholecystectomy, began to gag just as the peritoneum was being closed. I became discouraged and felt we must resume the anesthesia for the remainder of the operation, when the anesthetist noticed that she had an airway down the patient's pharynx, removed it, and we finished the operation without further trouble. Here again was a new thing. The patient was sufficiently awake to gag because of pharyngeal irritation yet did not strain or in any way interfere with continuation of the operation.

Patient 8 began to move but was easily quieted by anesthetist talking to her reassuringly till the end of the operation. She said she heard all that went on.

Patient 9 conversed with the intern over the screen about a chicken dinner while a gastroenterostomy was being performed and did not seem to mind pulling on the transverse mesocolon, insertion of large sponges, or wiping depths of peritoneal cavity.

Patient 10 was also awake for about an hour, though she wailed and moaned a great deal without straining or interfering with the operation. She did complain that the last two or three sutures hurt.

TABLE 1.

	Induction & preparation	Operation & anesthesia	Operation after stopping anesthetic
1. Mrs. J. J.....	Hysterectomy..... 20'	45'	1 hr. 15'
2. Mrs. J. E.....	Hysterectomy..... 15'	40'	1 hr. 50'
3. Mrs. A. H.....	Cholecystectomy..... 20'	45' (a)	45'
4. Mrs. J. F.....	Nephrothotomy..... 20'	45'	35'
5. Mrs. R. P.....	Hysterectomy..... 15'	45'	1 hr. 10'
6. Miss L. D.....	Hemicolectomy, right..... 10'	1 hr. 20' (b)	2 hr. 45'
7. T. P.	Incisional hernia..... 15'	1 hr.	50'
8. Mrs. S. V.....	Laparotomy..... 20'	20'	1 hr.
9. H. R.	Gastroenterostomy..... 10'	20'	1 hr. 15'
10. M. W.	Res. stomach and colon..... 20'	20'	2 hrs. 15'

(a) 5 minutes additional anesthesia.

(b) 10 minutes additional anesthesia.

DISCUSSION

Two facts definitely stand out as a result of this experience.

1. After a patient has been surgically anesthetized for a period of not less than 15 minutes, a major operation, including the most serious abdominal surgery, can continue to be performed over an additional period of one hour or more, the exact time probably depending on individual peculiarity, in one instance lasting two hours and fifteen minutes.

2. The analgesia produced by ether continues long after the patient is sufficiently conscious to carry on intelligent conversation.

SUMMARY

The following impressions have been gained therefrom:

1. These patients are either awake when they reach their rooms or waken shortly after.

2. They are not toxic and feel fine on awakening.

3. They have little or no nausea or vomiting.

4. There is little or no shock.

5. They have practically no postoperative complications.

6. Without discussing the relative merits of any other anesthetic, I believe this method of anesthesia should be the ideal one for operations expected to last one and one-half hours or more.

7. No complicated costly anesthesia machines are required.

8. It can be administered by the most poorly trained and least skilled anesthetist.

The last two points are of especial interest in war time, when limited transportation facilities and the lack of specially trained anesthetists must be faced.

Since it is generally admitted that ether is the safest of all general anesthetics, this experience would tend further to strengthen the opinion prevailing during the last World War, that ether is the best anesthetic for general use during war time.

How long must ether be given to produce this analgesia, or rather what is the shortest time? I have reduced it from one hour

to 15 minutes. Perhaps it can be made less. In any event, there is still much room for experiment and research.

DISCUSSION

Dr. John Adriani (New Orleans): Dr. Danna's paper illustrates a property of ether we are inclined to overlook,—the analgesic effect. It is difficult initially during anesthesia to use the analgesic properties of ether. However, after anesthesia has been established and the administration stopped, the portion absorbed by the tissues maintains a concentration in the blood sufficient for analgesia.

The analgesia described by Dr. Danna is satisfactory, I think, in selected cases. I do not think that it is ideal in all cases. Certain types of operations require excessive manipulation. The analgesia will not necessarily eliminate contraction of the muscles and pushing. In operations where relaxation is essential in addition to pain relief, the analgesia may not be sufficient. However, there is a definite place for ether analgesia in surgery.

Dr. Rudolph Matas (New Orleans): I cannot let a paper so valuable and interesting as Dr. Danna's go by without at least a word of appreciation and comment. Despite the general decline of ether as a pure inhalation anesthetic comparison with the quicker and more advantageous gas mixtures of ethylene, cyclopropane, and nitrous oxide-oxygen, it still remains the safest anesthetic in general practice, in extemporized emergency operating rooms, outside of well equipped hospitals, in rural, in military practice and other special circumstances in which unskilled anesthetists are not available.

Dr. Danna has directed our attention to a very valuable observation which is now generally overlooked but which was not unknown to the older anesthetists who began their experience with ether after the general abandonment of chloroform in the 80's of the last century,—virtually after nearly half a century of chloroform's undivided sway in the surgical practice of the Southern States. Before beginning the use of ether by the drop—open method, it was administered in closed or open masks and in saturating doses which left the patients unconscious and anesthetized long after the ether had been discontinued. Under these circumstances much of the minor work, as closure of the abdomen, was continued painlessly. This was particularly true when bronchorrhea and cyanosis caused alarms.

There is no doubt that this post-ether anesthesia was known in the heyday when ether was the exclusive anesthetic, but I doubt that the prolongation of the anesthesia was systematically or deliberately utilized by the operators of that time. There can be no doubt that the practice of administering preoperative sedation, especially the mor-

phia and scopolamin, morphia-atropine; sedation with the barbitals and intravenous anesthetics (amytal, evipan, pentothal) all of which prolong the anesthesia of ether, profoundly modify any conclusions based on the action of ether alone.

The special merit of Dr. Danna's contribution, as I see it, lies in his calling attention to the prolonged anesthetic action of ether after its administration has been suspended; and to the observations he has made on the duration of this period according to the nature and duration of the operation itself. As a result of these observations it would seem that despite the many variables that enter into the solution of the problem, there is an anesthetic effect seemingly inherent and peculiar to ether which permits the surgeon to continue the operation painlessly for a variable but useful period, i. e., after the ether has been completely discontinued. Dr. Danna's efforts to classify the cases and measure the duration of the etherless period are interesting and instructive since the operator, availing himself of this knowledge, may often accomplish his task without unnecessary toxic saturation.

Dr. J. E. Heard (Shreveport): I am sure that there is one point some of the surgeons would like Dr. Danna to comment on further and that is the question of straining, and abdominal rigidity in closure.

Dr. Joseph A. Danna (In closing): Dr. Adriani was present especially in that case in which the patient talked over the screen with the intern and he saw me dig down with a lap sponge into the bottom of the cavity while she was in conversation.

Now, it is nice to explain this on the fact that the tissues become saturated, and that the ether stays in the tissues any length of time and is eliminated slowly, but when the tissues become saturated the result is unconsciousness. Is it eliminated from one point, say the brain, faster than another? The fact that I am trying to bring out is that there is a differential effect of ether on consciousness and on pain sense, and that the effect on pain sense lasts for an hour or more longer than the effect on consciousness. That is something I never heard of before.

Now, somebody asked what the preoperative preparation was. My patients usually get 1/6 of morphine and 1/150 of atropine half an hour before the time set for operation and that is usually an hour before we make the incision. This hypodermic, therefore, is given an hour before starting work.

Now straining: If you operate on a large incisional hernia in the upper part of the abdomen, you know that if the patient really begins to strain the sutures will pull apart.

I had the impression, I think we got it from chloroform days, that if the patient was not com-

pletely under that you could not close the abdomen. But if your patient is saturated with ether for at least 15 minutes, I know now that an hour or an hour and a half later you can close the abdomen and the patient will not strain.

DIAGNOSIS AND TREATMENT OF SOME COMMON AILMENTS OF THE FEMALE URINARY TRACT*

U. S. HARGROVE, M. D.
BATON ROUGE

No attempt will be made in this paper to cover the whole urinary system in the female. Attention will be directed chiefly to conditions involving the bladder and urethra, which are met with every day by the general physician, and which in some ways are more or less peculiar to women.

The upper urinary tract cannot of course be divorced from the bladder and urethra. In many cases it will be necessary to make a complete survey of the kidneys and ureters, although the only symptoms are referable to the lower urinary tract. There are two conditions of the upper tract, which seem to be much more common in the female than in the male, and which I will mention briefly.

The first is ptosis of the kidney; the second is stricture of the ureter. Discussion of either of these subjects usually becomes heated, so I will merely mention them here and pass on. If either of these conditions is found during the course of an investigation of bladder or urethral symptoms, it will have to be considered as a possible cause for these symptoms, and appropriate treatment given. Other upper urinary tract diseases, on the whole, present about the same picture in the male as in the female.

Bladder and urethral pathology though, differs considerably in the two sexes. This should not be surprising, as there are anatomic and physiologic differences also to be found here. I will now consider in some detail a few of the more common bladder and urethral diseases as seen in women.

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 28, 1942.

Some complaint about urination is almost as common in a female practice as fever is in a pediatric practice. The symptoms of frequency, burning, bearing down, straining, and "passing gravel," are heard over and over again. Let us see what are the commonest causes of these complaints, and what is the best treatment.

CYSTITIS

Acute cystitis is usually ushered in by the above mentioned chain of symptoms. There also may be some hematuria, and occasionally this may be sufficient to be quite alarming. The diagnosis of acute cystitis is usually quite easy, except when accompanied by hematuria, as above mentioned. The catheterized urine always contains a rather large amount of pus. If blood is also present, it usually rapidly diminishes in amount after the first few painful voidings, which initiate the attack. It is helpful in treatment if the causative organism can be identified by smear or culture. The treatment of acute cystitis is much easier, and results are much quicker now than formerly. Sulfathiazole by mouth, two tablets three or four times a day, is effective in practically all cases, except those due to organisms of the enterococcus group. This group, in the experience of some urologists, and in my own, is seen with considerable frequency. Sulfathiazole has proved practically worthless in cases due to this organism, but mandelic acid is quite effective. Hence, the advisability of finding out with what organism one is dealing. Acute gonorrhea is sometimes ushered in with symptoms similar to those mentioned above, and must be kept in mind, but it will not likely be overlooked if one catheterizes the patient, when he will notice the acute discharge, and will then make a smear.

Other measures besides chemotherapy, which are useful in treatment, are hot sitz baths, and sedatives at home, and bladder irrigations at the office, using warm, mild antiseptic solutions, usually weak potash or boric acid. The acute cystitis case usually clears up in a week or two under these measures. If it fails to do so, a complete investigation of the entire urinary system

should be made. The same thorough study should be made if these acute episodes begin to recur at intervals. In addition to the urinary tract, a thorough physical examination is also necessary. The underlying cause of the recurrences may be found in the cervix, Skene's or Bartholin's glands, the uterine adnexa, the teeth, tonsils, and sinuses, the gastrointestinal tract, or elsewhere. A focus of infection in the cervix, and abscessed teeth, have most frequently been found the cause in my experience, when the urinary tract itself has been found to be free of discoverable lesions. Chronic cystitis may be an aftermath of an acute attack, or there may not have been any acute phase. The symptoms are the same, only less severe. If an actual cystitis exists, there is pus and perhaps red blood cells in the urine. Complete investigation is necessary, and may uncover various lesions of the kidneys and ureters, as well as lesions of the bladder, such as stone, neoplasm, diverticulum, foreign body, tuberculosis, non-specific ulcers, Hunner ulcer, neurogenic bladder, and neoplasm of the pelvic organs. These conditions, of course, all call for appropriate treatment.

INVOLVEMENT OF URETHRA

Urethritis in the female had almost escaped attention in text books and current literature up until the last few years. Folsom of Dallas, Texas, has done much to call the attention of the profession to the female urethra. Affections of the urethra cause about the same symptoms as those of cystitis, but the urethra does not respond to the treatment used for cystitis. It is for this reason that the attention of the profession should be more frequently directed toward the female urethra. Acute urethritis is usually, but not always due to the gonococcus. The symptoms are chiefly frequency and burning on urination. Examination may reveal some discharge, and some swelling. Treatment should be very conservative, chiefly chemotherapy, with little or no local treatment. Chronic urethritis is a cystitis, without cystitis. The symptoms are all there, but when the urine is examined, it may be almost or quite negative. The pa-

tient is then in great danger of being labeled a neurotic, when she really has some very definite pathology in the urethra. Stricture of the female urethra is much more common, in my estimation, than is usually thought. Often the entire train of symptoms of frequency, burning, urgency, and bearing down, can be alleviated, and cured by simple dilatation of the urethra.

The external meatus is most often the site of stricture, and should be gradually dilated just like a stricture of the male urethra. Occasionally a meatotomy may be necessary, where there has been extensive scarring from previous inflammation or trauma. Even in the absence of definite stricture, thorough dilatation is useful in clearing up a chronic inflammation. The urethra should be inspected, which is best done through a straight endoscope. A normal mucosa has an even and smooth reddish color, while the mucosa of a chronic urethritis resembles the mucosa of the throat with a pharyngitis. The red color is more intense, and there are apt to be whitish or grayish spots and streaks. In order satisfactorily to examine the urethra, the bladder should first be emptied. The endoscope is then passed beyond the internal sphincter, and gradually withdrawn. A long aspirator should be at hand to aspirate any urine running down in the field of vision, and long dry applicators are then introduced, thus giving a very clean and satisfactory view. The treatment of choice is the topical application of 2 to 10 per cent silver nitrate, being very sure there is not an excess of the solution on the applicator. Use of this treatment once a week is very satisfactory. A soothing instillation of neosilvol or gomenol is well made before each treatment is concluded. Other conditions likely to be partly responsible for the symptoms are an infected cervix, chronic skenitis, and a vaginitis, due either to monilia or *Trichomas vaginalis*. This latter organism, I am quite sure, is often the cause of much urinary distress, and should be looked for in every such patient. If Skene's glands are thickened, they should be destroyed by fulguration, with a needle electrode.

An infected cervix should be treated by linear cautery, conization, or other means.

If these conditions are all kept in mind, and properly recognized and treated, there will remain very few female patients whom you will label as having neurotic or unspecified irritable bladders.

CONCLUSIONS

1. Urethritis is very often overlooked.
2. Cystitis and urethritis are very common in the female.
3. Their recognition is not difficult, and proper treatment is very satisfactory.

DISCUSSION

Dr. Robert F. Sharp (New Orleans): Dr. Hargrove has covered this important subject in a thorough and practical manner. I am limiting my remarks to certain types of those cases Dr. Hargrove referred to as "cystitis without a cystitis." By this is meant symptoms of cystitis without positive urinary findings. This group is composed of a large number of conditions clearly recognized as a clinical entity, while others are not so definite. The pathologic process may be either within or outside of the urinary tract.

Hunter's ulcer, interstitial cystitis and neurologic bladders present some of the most trying problems with which the urologist has to contend. The bladder neck obstructions, urethral strictures and chronic urethritis with their hyperplastic and polypoid changes, respond satisfactorily to proper management. Urethral caruncle may be either symptomatic or asymptomatic. McKim has recently reported a series of 202 cases of urethral caruncle on which he has operated. He brings out that ordinary inspection of the urinary meatus is not sufficient to rule out the presence of a caruncle. He inserts an applicator wrapped with cotton into the urethra and on withdrawing it, brings into view some caruncles that would not otherwise be visible. The operative technic that he describes is unique. His article will be published in the near future.

I now want to comment on a group of cases which are by no means uncommon. I refer to the post-menopausal women who are always complaining of pains in the bladder or vagina, frequency, urgency and dysuria and even incontinence. Examination reveals atrophic changes of the vulvae and meatus, indicative of estrogenic deficiency. Urethroscopic findings are a rather thin mucous membrane, somewhat reddened, which tends to bleed readily on dilatation. This type of case does not respond satisfactorily to the usual methods, that is dilatation and application of silver nitrate. This addition of estrogenic therapy has proved beneficial in a large majority of the cases. Salmon, et al., reported the use of estrogenic

therapy alone in the treatment of a series of 16 such cases with complete relief of 13 by the fourth week. There was a tendency for the symptoms to recur after the treatment had been discontinued for varying periods of time.

The next group is one in which no local lesion in the urinary tract exists to explain the symptoms, or if such a lesion does exist, it is not in proportion to the symptoms. This group is by no means limited to the female. In the male this group makes up a good percentage of those suffering from impotence. Their syndrome is usually explained by the term "low pain index" or "neurotics." It is my opinion that in many instances we are too quick to label these patients with the above terms. Experience has led me to believe that in some instances a toxic condition exists resulting in a neuralgia, or what may be termed rheumatic disease, in this area just as you may have pain in other parts of the body without any demonstrable lesions. At any rate, they do not respond well to local treatment. Removal of focal infections, correction of dietary discrepancies, proper exercise and some form of mental diversion have been the most effective measures undertaken in my experience.

Dr. M. H. Foster (Alexandria): In order to avoid another presentation of the usual discussion about nephropexy, I am going to refer briefly to three other conditions: First, skenitis; more than a dozen years ago this subject was presented in an exceptional paper by Dr. Stevens of San Francisco, at the A. M. A. meeting, over in the Hutchinson Memorial on Canal Street, and ever since then I have been diligently searching out infections of these glands.

Secondly, urinary infections, which are divided into three general groups, quite important from the standpoint of application of therapy; those groups of infections which do not contain organisms splitting urea and the other group of organisms which do split urea with formation of ammonium. It is often possible to demonstrate urea-splitting organisms by dinnertime in media planted at breakfast.

Third, neoplasms of the bladder. While not frequent, neoplasms of the bladder occur. I had a conversation with Colonel Ashe of Washington recently and he said that the ratio of neoplasms of the kidney is 9:1. In the presence of neoplasms which are annoying and not more than 1 cm., they may be attacked by high frequency current through the urethra. I have followed one in Alexandria and a week ago I found two small lesions and cut them out with one rush of the resection loop. Those malignant lesions more than 1 cm. across the base are often found infiltrating the bladder wall and occasionally invading the perineum. These lesions should never be attacked by the transurethral method but require surgical section.

ABDOMINO-THORACIC GUNSHOT INJURIES*

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During the past year, while engaged in a study of 478 cases of abdominal gunshot injuries admitted to the New Orleans Charity Hospital, I was especially impressed by the large number of victims simultaneously suffering injury to the chest cavity and its contents. The frequency of this complicating injury, and the fact that 228 patients, or nearly 48 per cent of the entire series, showed evidence of injury to both abdominal and thoracic cavities, stimulated the writer to make a survey of this particular group. According to Harrington¹ "there are fundamental differences between the physiology and dynamics of the thoracic cavity and those of the abdominal cavity which makes a marked difference in the immediate as well as the subsequent treatment of wounds involving the two cavities." Thus, the clinical picture of an open pneumothorax, or a tension pneumothorax—with possible injury to some other important thoracic structure complicating an already very dangerous abdominal wound—makes this type of case a relatively more serious problem than the type in which either the chest only, or the abdominal cavity alone is involved. The seriousness of this type of case is amply borne out by the mortality figure of 62.28 per cent in the group of abdomino-thoracic cases herein considered as compared to the mortality rate of 48 per cent among the 250 cases comprising the abdomino-pelvic group in this series.

TABLE 1
INCIDENCE—Race and Sex
Abdomino-thoracic Group

Race and Sex	Total	Lived	Died	Mortality Per cent
White Males	63	24	39	61.90
Negro Males	116	42	74	63.79
White Females	19	9	10	52.63
Negro Females	30	11	19	63.33
Totals	228	86	142	62.28

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Penetrating abdomino-thoracic wounds have been classified by Edwards² into: (1) those in which the chest and abdomen are penetrated by separate missiles; (2) those cases in which a single missile penetrates the chest and enters the abdominal cavity or, penetrating the abdomen, enters the thoracic cavity; (3) cases in which a penetrating wound of the lower chest has been inflicted during expiration and thereby entering the pleural cavity passes through the diaphragm to involve the abdomen, and (4) those cases in which a "tangential" wound of the lower chest, caused by the missile or "indriven fractured ribs" might "produce considerable laceration of the diaphragm." The pictures given by this classification are virtually the same as those observed among the 228 cases herein considered, except that in none was a "tangential" wound described. Many in this group of abdomino-thoracic wounds were the victims of bullets entering both cavities. A large number were injured by the penetration of only one missile involving both cavities. In addition there was a fairly large group which not only received abdomino-thoracic injuries but received wounds in other regions, such as the head and extremities, as well.

During 1918, according to Gordon-Taylor,³ abdomino-thoracic injuries constituted 9 per cent of a certain series of thoracic cases admitted to a "clearing station." The incidence of abdomino-thoracic cases, reported by Wallace⁴ from World War I, constituted 12 per cent of all abdominal wounds reaching the casualty hospitals. Jolly,⁵ reporting from the recent Spanish Civil War, gives 11 per cent as the incidence of abdomino-thoracic wounds among all abdominal wounds admitted to a "hospital of first urgency." Storck,⁶ in a series of 46 cases of penetrating (gunshot and stab) wounds of the abdomen, found that 11 patients, or 23.9 per cent, showed associated chest injuries. The 228 cases of abdomino-thoracic gunshot injuries among 478 cases of abdominal gunshot wounds studied in this series, gives an incidence of 47.6 per cent, which is considerably greater than the figures given in the afore-mentioned reports. However,

the circumstances under which these wounds were inflicted are those which obtain in civil life, circumstances during which the assailant usually aims in the direction of the chest which he knows contains vital structures.

ANATOMIC CONSIDERATIONS

In order to get a proper appreciation of abdomino-thoracic gunshot injuries it is necessary to have a clear understanding of the topographic as well as the cross-section anatomy involved. In this respect one must consider the abdominal cavity as projecting itself upward into the thoracic cavity and downward into the pelvic cavity. Accordingly, it might be said that the upper limit of the abdominal cavity is flanked on each side by the lower limits of the thoracic cavity, which because of the dome-shaped diaphragm permits the chest to overlap and partially cover the upper limit of the abdomen. The upper limit of the abdominal cavity reaches the level of the upper border of the fifth rib anteriorly on the right side and the fifth intercostal space anteriorly on the left side. The lower limits of the pleura are usually the lower border of the ninth rib in the midaxillary line and the twelfth rib posteriorly. The diaphragm extends even lower in these regions. Anteriorly, in the midline, the diaphragm is at its highest point peripherally just behind the xiphoid process. From this point the periphery of the diaphragm gradually passes to a lower level as it follows the lower border of the ribs.

A cross-section of the body, passing through the ninth intervertebral disc, which goes through the lower third of the heart, cuts through the upper limit of the diaphragm. This will be recognized as being rather high up in the thoracic cavity since the section goes through large areas of both lungs. A section passing through the tenth intervertebral disc shows both pleural cavities, both lungs, the liver, the spleen, the stomach, and the lower limit of the pericardial cavity. A perforating missile entering the body on the right side between the sixth and seventh ribs in the midaxillary line and traversing to the opposite side on a line perpendicular to the midline of the body

would enter the right pleural cavity, pass through the right lung, the right diaphragm, the liver, the stomach, perhaps the spleen, the left diaphragm, the left pleural cavity and out through the left chest wall. When one considers other possible routes from the same point the possibilities multiply many times. A transverse section through the twelfth thoracic vertebra near the twelfth disc still shows the costophrenic sulcus on each side as well as the diaphragm. In addition one also sees the liver, the stomach, the lesser peritoneal sac, the pancreas, the spleen, both kidneys, both adrenal glands, the splenic flexure and the jejunum. Thus, in considering penetrating wounds of the trunk passing within the limits of parallel transverse sections, between the ninth intervertebral disc and the twelfth thoracic vertebra, one can easily understand why such injuries are very likely to involve both thoracic and abdominal cavities and their contents.

STATISTICAL ANALYSIS

The homicidal activities of the negro in New Orleans are particularly responsible, according to many observers, for this city's "unenviable superiority in homicidal gunshot wounds." Thus, true to the traditions of the past, this group of abdomino-thoracic gunshot injuries shows practically no variation when considering the race of the victims. A thorough study of the histories in this series likewise showed that the most common assailant, as well as the victim, is the negro male. Accordingly, it was found that the negro males contributed 116 victims, or 50.8 per cent, of the entire group. The white male victims, numbering 63 and representing 27.6 per cent of the series, was a poor second, although not by any means insignificant nor inconspicuous. Among the females the negro women with 30 victims comprised 13.1 per cent of the entire series; whereas, the white women with 19 cases represented 8.3 per cent of the total number of abdomino-thoracic gunshot wounds studied.

The prognosis in gunshot injuries involving the chest or abdomen is obviously very ominous. When it is considered that in a

given case not only might either one of these cavities be involved but that both actually are invaded, the outlook is proportionately more serious. Hence, Edwards⁷ observes that "abdomino-thoracic wounds are usually associated with a high mortality." Gordon-Taylor³ gives the recovery rate of abdomino-thoracic wounds in 1916 as about 18 per cent. This writer³ likewise quotes a recovery rate of 44.5 per cent in a series operated upon during the first World War. He adds, however, that "some series of abdomino-thoracic cases in the casualty clearing zone gave a more favorable recovery rate than this", further stating that some operators "saved as many as 79 or 80 per cent of their patients." As already given, the mortality rate among the group studied by the writer is 62.28 per cent. This rate varied relatively little when the race and sex of the group was considered. Hence, the negro males with 74 deaths gave a mortality rate of 63.79 per cent; the negro females with 19 deaths, a rate of 63.33 per cent. The white males with 39 deaths, a death rate of 61.90 per cent; while the white female group showing 10 deaths, gave the lowest mortality rate with the figure of 52.63 per cent. As previously indicated, the figure of 62.28 per cent for the abdomino-thoracic group, when compared to a mortality rate of 47.6 per cent among the abdomino-pelvic group, in this series of 478 cases, shows a difference, sufficiently appreciable, to allow for interesting speculation.

STRUCTURES INJURED

Penetrating abdomino-thoracic gunshot injuries are not unlike other abdominal gunshot wounds in the multiplicity of organs and other structures involved. In those cases with one bullet wound the diaphragm is necessarily always injured; whereas, cases showing separate chest and abdominal wounds frequently show no evidence of injury to this structure. Among the writers reporting large series of abdominal gunshot wounds, Loria,⁸ Oberhelman and Le Count,⁹ Lockwood,¹⁰ Storck,⁶ Rippey,¹¹ Gordon-Taylor,¹² and others have discussed, rather at length, visceral and other structural injuries encountered. Ab-

domino-thoracic injuries, because of the additional possibility of involving the various thoracic structures, and because of the possibility of such serious complications as open pneumothorax, tension pneumothorax, hemothorax, and hemopneumothorax constitute a relatively more serious group.

In the present series among the thoracic structures injured the heart was designated as having been wounded in three cases, each ending fatally. Two patients with injury to the pulmonary vessels likewise died. The right lung was named in 14 cases with 13 fatalities, and the left lung in 27 cases with 23 deaths. The diaphragm was named in 77 cases among which 68 died; and there were two spinal cord injuries, each succumbing. In addition to these structures the accompanying table designates the number of cases receiving injury to the viscus or structure named.

TABLE 2
STRUCTURES INJURED
Abdomino-thoracic Group

	Total	Died	Lived	Mortality
Liver	130	40	90	69.23
Spleen	20	5	15	75.00
Right kidney	22	3	19	86.36
Left kidney	23	3	20	86.95
Pancreas	9	2	7	77.77
Gallbladder	5	0	5	100.00
Stomach	69	13	56	81.17
Duodenum	9	0	9	100.00
Small intestine	67	11	56	83.58
Large intestine	55	6	49	89.09
Aorta	1	0	1	100.00
Celiac artery and branches	3	1	2	66.66
Heart	3	0	3	100.00
Pulmonary vessels	2	0	2	100.00
Right lung	14	1	13	92.85
Left lung	27	4	23	85.18
Diaphragm	77	9	68	88.31
Spinal cord	2	0	2	100.00
Mesenteric vessels	33	6	27	81.81
Omentum	4	0	4	100.00
Urinary bladder	1	0	1	100.00
Iliac vessels	3	0	3	100.00
Ovary	1	0	1	100.00
Vagina	1	0	1	100.00
Unknown	13	8	5	38.46

Of much interest as regards this series is the fact that the liver was named as injured in 130, or more than one half of the cases. The kidneys were named in 45 cases, the spleen in 20, the pancreas in nine, the gallbladder in five, the stomach in 69, and

the duodenum in nine cases. These are of particular interest because of their proximity to the thoracic cavity and because of the frightfully high mortality accompanying injury to these structures. Additional viscera and other structures designated as injured in this group of 228 cases of abdomino-thoracic gunshot injuries were the small and large intestines, the aorta, the celiac artery and its branches, the mesenteric vessels, the great omentum; and in the pelvis, the bladder, iliac vessels, ovary and vagina. Failure to record the viscera and other structures injured occurred in 13 cases of the entire series. It was noted that the greater the number of viscera and other structures injured in any given case the more likely was the victim to die.

COMPLICATIONS

In abdomino-thoracic gunshot wounds the usual complications found in abdominal injuries are supplemented by such conditions as hemothorax, hemopneumothorax, open pneumothorax and tension pneumothorax, each of which if not recognized and treated early will play an important part in determining a fatal issue. Among the strictly chest complications, in this series, hemothorax was diagnosed in 44 cases, hemopneumothorax in 10 cases, and suction pneumothorax and open pneumothorax in one case each. In a considerable number of these cases the records would seem to indicate that the diagnosis of these four complicating conditions was very possibly overlooked. Additional chest complications named in this series were pneumonia in 21 cases, gangrene of lung, collapsed lung, strangulated diaphragmatic hernia, coronary thrombosis, hemopericardium, pericarditis, and gangrene of the abdominal and chest walls, all one case each. Other complications were those not infrequently observed in abdominal gunshot injuries and are listed in the accompanying table.

An interesting yet not unusual observation in the study of the complications named in this series of abdomino-thoracic gunshot injuries was the fact that many of the fatal cases especially showed more than one complicating condition.

TABLE 3
COMPLICATIONS
Abdomino-thoracic Group

Complications	Total	Lived	Died	Mortality Per Cent
Peritonitis and septicemia	57	9	48	84.21
Hemothorax	44	15	29	65.91
Hemopneumothorax	10	4	6	60.00
Pneumonia	21	4	17	80.95
Gangrene of lung	1	0	1	100.00
Mesenteric thrombosis	1	0	1	100.00
Gangrene transverse colon	1	0	1	100.00
Pyelonephritis	2	1	1	50.00
General septicemia	3	0	3	100.00
Empyema	2	2	0	00.00
Thrombophlebitis	1	1	0	00.00
Collapsed lung	1	1	0	00.00
Subphrenic abscess	2	1	1	50.00
Fecal fistula	2	1	1	50.00
Chemical peritonitis (bile and pancreatic)	1	0	1	100.00
Cystitis	2	1	1	50.00
Strangulation diaphragmatic hernia	1	0	1	100.00
Coronary thrombosis	1	0	1	100.00
Pericarditis	1	0	1	100.00
Hemopericardium	1	0	1	100.00
Suction pneumothorax	1	0	1	100.00
Infected incision	6	6	0	00.00
Gas gangrene (left leg)	1	1	0	00.00
Gas gangrene abdominal and chest walls	1	1	0	00.00
Liver abscess	1	0	1	100.00
Tetanus	1	1	0	00.00
Decubitus ulcers	1	1	0	00.00
Open pneumothorax	1	0	1	100.00
Spinal cord injury	2	0	2	100.00
Evisceration	1	0	1	100.00

CAUSES OF DEATH

Aside from one case of gangrene of the left lung, one case of coronary thrombosis and 13 cases of pneumonia, the causes of death as given in this series are conspicuous by an absence of those conditions commonly associated with a fatal termination in chest injuries. Hence, hemothorax, which according to the list of complications was named among 29 of the fatal cases; hemopneumothorax, named in six of the patients dying; strangulated diaphragmatic hernia, pericarditis, hemopericardium, suction pneumothorax, and open pneumothorax, each designated once among the fatal cases, as well as two fatal spinal cord injury cases, were all omitted from the list of causes of death collected in this series. An analysis of these causes of death presents a picture very analogous to the causes of death observed in abdominal gunshot injuries in general with "hemorrhage and shock" and "general peritonitis and septi-

cemia" accounting for the great majority of the fatalities. The causes of death as given in this group of cases are shown in the following table.

TABLE 4
CAUSES OF DEATH
Abdomino-thoracic group

Causes of Death	Cases	Incidence Per cent
Hemorrhage and shock	97	68.40
General peritonitis and septicemia	43	30.28
Spinal cord injury	2	1.48
Gangrene of lung	1	.70
Bronchopneumonia	13	9.15
Pyelonephritis	1	.70
Mesenteric thrombosis	1	.70
Gangrene transverse colon	1	.70
Chemical peritonitis (bile and pancreatic)	1	.70
Coronary thrombosis	1	.70

TREATMENT

A study of the treatment in this group of cases shows that in addition to the usual forms of therapy, such as infusions and transfusions, 159 patients were subjected to exploratory celiotomy with 92 deaths, or a mortality of 57.86 per cent. Among the 69 patients not operated upon there were 50 fatalities, giving a mortality rate of 72.46 per cent. In the entire series chest procedures were designated as having been done in three cases. One of these cases was subjected to the aspiration of blood with air replacement; the second was subjected to a thoracotomy for empyema; and the third had his chest strapped.

The failure to use the sulfonamides more frequently in these cases is no doubt partly explained by the fact that many of these patients were treated during the period before these drugs enjoyed their present popularity. Accordingly, prontosil was used in two patients with recovery, sulfanilamide was used in five cases with one death, neoprontosil in one patient who died, sulfapyridine in one case which recovered and sulfathiazole in four cases with no deaths. One patient was treated with both sulfanilamide and sulfathiazole. In none of these abdomino-thoracic cases was a sulfonamide drug designated as having been placed in the peritoneal or thoracic cavity. Use of these drugs in this manner, as already practiced by Rippey,¹¹ will very probably improve the mortality figures.

TABLE 5
OPERATED AND NON-OPERATED CASES
Abdomino-thoracic group

	Total	Lived	Died	Mortality Per Cent
Chest operations	0	0	0	00.00
Abdominal operations	159	67	92	57.86
No operation	69	19	50	72.46

SUMMARY

In making a study of 478 cases of abdominal gunshot injuries, treated at the New Orleans Charity Hospital, and which will be reported later, the writer was impressed by the large number which concomitantly showed evidence of injury to the thoracic cavity and its contents. A study of this group of 228 cases of abdomino-thoracic injuries reveals that the mortality among them was greater than in the remaining group of 250 abdomino-pelvic cases. The increased gravity of these cases is appreciated more fully when one considers that in addition to the usual intra-abdominal traumatic lesions in abdominal injuries the surgeon is not infrequently confronted with such ominous conditions as hemothorax, hemopneumothorax, and open and tension pneumothoraces. It is my opinion that more of the fatal cases in this series died of chest complications than the records indicate.

A brief review of the topographic and cross-section anatomy between the ninth intervertebral disc and the lower level of the twelfth thoracic vertebra rather impressively shows why so many gunshot injuries in this region are likely to involve both abdominal and chest cavities and their contents. In addition the likelihood of greater hemorrhage from injuries to structures up under the diaphragm adds to the gravity of these cases.

The seriousness of injury to the various abdominal and thoracic structures involved is amply brought out by the respective mortality rates. The liver particularly and the kidneys, stomach, spleen, lungs and diaphragm, all show frequent involvement in these injuries; and, the pancreas and duodenum must always be kept in mind.

The complications observed among these cases are numerous and varied. Not infrequently more than one of these complications added to the gravity of the case at hand. A few of these complications, as peritonitis, hemothorax, and pneumonia were of relatively frequent occurrence. A large number were observed very infrequently, usually not more than once each in the entire series.

The causes of death, as given in this series, are characterized by the frequency of "hemorrhage and shock" and "general peritonitis and septicemia." Although pneumonia accounts for a fair number of fatalities the other causes are infrequent; and, the entire group is interesting because of the absence of several chest complications frequently causing death in chest injuries.

The management of these cases shows an operative mortality of 57.86 per cent as against a non-operative mortality of 72.46 per cent. All operations were exploratory celiotomies. Aside from one thoracotomy for empyema no chest operation was performed. Only six patients in the entire series were treated additionally with one of the sulfonamide drugs.

CONCLUSIONS

1. A series of 228 abdomino-thoracic gunshot injuries occurring among 478 cases of abdominal gunshot wounds, has been studied and found to reveal a number of interesting facts.

2. The anatomy involved is very important, and a review of the main features is given in order to show the true anatomic picture of the structures involved in abdomino-thoracic gunshot injuries.

3. I agree with Edwards' classification of these cases and feel that despite the fact that many have injuries to the chest and abdomen, caused by separate missiles, nevertheless, whether caused by one missile or more than one missile the problem is the same—a simultaneous involvement of two important and adjacent cavities "the physiology and dynamics" of which are fundamentally different. I further feel that the nomenclature "abdomino-thoracic" is proper and very adequately fits these cases.

4. If the records studied represent a criterion to these cases in civil life elsewhere it would appear that all too frequently the surgeon pays too little attention to the thoracic phase of these injuries.

5. Although the incidence of abdomino-thoracic injuries is large in this series, the fact that they occurred in civil practice to a great degree explains an assailant's attempt to have his missile strike the vulnerable thoracic region. In addition during warfare the assailant is usually at a much greater distance from his victim.

6. It is very likely that many abdomino-thoracic injury victims in warfare die on the field of battle, the usually larger and more damaging missile accounting for an open pneumothorax that is no doubt fatal within a short time, as compared to the smaller missiles of civil life the entrance and exit points of which very probably frequently close sufficiently to avoid the ill effects of a suction pneumothorax.

7. The present series of abdomino-thoracic gunshot injuries has been found to show a mortality rate very appreciably different and greater than the abdominopelvic group with which it is compared.

8. The possible complications of hemothorax, hemopneumothorax, open pneumothorax, and tension pneumothorax add to the dangers already present through the presence of an abdominal lesion.

9. Although other viscera showed frequent involvement, injuries to the liver, kidneys, stomach, spleen and lungs were of relatively more frequent occurrence.

10. The commonest causes of death in this series are not unlike those observed in abdominal injuries. Causes of death frequently observed in chest injuries are conspicuous by the small number reported.

11. Although the operated cases show a frightfully high mortality, the non-operated cases, many of which were moribund on admission, show even a greater mortality rate.

12. The six cases given a sulfonamide drug in this series showed one death. Routine use of chemotherapy, in abdominal and thoracic cavity wounds, will probably show

an improvement in the mortality rate of these cases.

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DISCUSSION

Dr. Rudolph Matas (New Orleans): I believe this is the best contribution to the special field of the abdomino-thoracic gunshot wounds that the experience of the Charity Hospital has yet yielded on this particular subject, thanks to Dr. Loria's industrious research and able study.

That this is no small compliment or insignificant statement is realized when we consider that the experience of the Charity Hospital in these traumatisms is greater in wealth of material than that of any other civilian hospital of the same size and age in the United States and probably in the world.

As in all State hospitals in the "black belt of the South"—only on a larger scale,—the negro is largely responsible for our unenviable regional fame for unsurpassed experience in homicidal trauma,—a reputation which we trust will, in time, become purely historical.

Since the year of its foundation (1832) the Hospital has furnished clinical and pathological material for numerous and distinguished studies in this field by its staff, but little was done in the way of statistical compilations and collective reports until the surgical treatment of penetrating abdominal wounds was inaugurated by Dr. A. B. Miles on March 8, 1891.

In further confirmation of the supremacy of Charity Hospital as the source and repository of gunshot wounds of the abdomen in peace time, I would recall that in 1901, I compared the statistics of the Charity Hospital on gunshot wounds of the abdomen with those of other general hospitals, in Montreal, Boston, New York, Philadelphia, Cin-

cinnati, St. Louis for the same period, and found that the admissions at Charity Hospital during the decennium 1890-1900, alone, (234 cases) exceeded the combined experience of the seven other hospitals (205 cases). The greater relative incidence of these wounds at the Charity Hospital was exhibited in my report for 1905-1926, as chairman of the special committee appointed by the staff,—of which Dr. Loria, acting as secretary, compiled the admissions for gunshot wounds of the abdomen from 1890-1925,—35 years. These cases summed up a total of 1,175 gunshot wounds of the abdomen treated in the Hospital during that period, with an average annual mortality of 60.5 per cent. In the interval between 1904-1928,—24 years, the admission for gunshot wounds in general amounted to 6,075 patients with 1284 deaths,—60 per cent negroes. It is not surprising that Col. Lagarde jokingly suggested that the students of the Army Medical School should come to the Charity Hospital for part of their military training.

In this paper, Dr. Loria has assembled all the gunshot wounds of the abdomen admitted to the Hospital from January 1, 1927 to January 1, 1942, in all 478 patients suffering from gunshot wounds of the abdomen admitted in 15 years. Of these, he has detached 228 or 48 per cent, in whom penetration of both cavities simultaneously by one or more missiles had been clearly demonstrated clinically or by autopsy. While the large incidence of these bi-cavitary injuries is surprising in comparison with other military and civilian statistics, we must accept this proportion as correct since it is based on exact anatomical and clinical data, recorded by the author in each case. Besides, the thoracic signs are frequently overshadowed and overlooked in the tempest of the secondary abdominal complications. It is also not uncommon that certificates of death only account for the dominant abdominal wounds without mention of a less obtrusive thoracic injury, which, none the less, is revealed on attentive revision of the clinical history.

When we realize how much of the abdomen (under the diaphragm) is embodied or telescoped into the thoracic cage, we wonder how a dual (thoraco-abdominal) injury is avoided when bullets or projectiles penetrate the chest transversely or antero-posteriorly within the limits of the broad belt (defined by the author) that extends posteriorly from the 9th intervertebral cartilage to the lower border of the 12th rib; laterally from the 5th rib to the 12th and, antero-laterally, by the xiphoid cartilage, the costal arches and epigastrium.

Judging by the listed causes of death in the thoraco-abdominal group, it would seem that if the patient can survive the primary hemorrhage and shock, whether thoracic or abdominal (which

accounts for 68.40 per cent of the deaths), that the secondary perils that follow are preponderantly abdominal (peritonitis, ileus and septicemia) rather than thoracic (hemo- and pneumothorax, bronchopneumonia, empyema, projectiles in heart and pericardium, and so on).

There are many phases of abdominal and thoracic anatomy and surgery peculiar to the thoraco-abdominal group that Dr. Loria has developed in his study. Notably among these are the cadaveric cross sections of the body at various levels which exhibit the areas and organs along the trajectory of a projectile traversing the chest either transversely or antero-posteriorly; penetrating and perforating wounds at these levels being most frequently responsible for the bi-cavitary injuries.

Even more important are the statistical studies on the relative frequency and gravity of injury to the individual organs of the abdomen and thorax, in shaping the prognosis.

In regard to the general prognosis, it is made clear, as would be expected, that invasion of both cavities simultaneously adds very seriously to the collective mortality of the group; thus, the mortality of the dual group is 62.28 per cent while that of the abdominal cavity alone is 47.6 per cent and that of the chest alone, 34.8 per cent. Race and sex appear to have very little effect on the mortality. The death rate of the negro males who constitute 50.8 per cent of the series, was 63.79 per cent, while the white male mortality from the same cause was 61.90 per cent.

It would seem from Dr. Loria's figures that in dealing with these dual lesions it is the abdominal wounds and their complications that make the greatest demands on surgery while the thoracic pathology, grave as it is, is secondary and relatively unimportant from the surgeon's viewpoint. In this series there was no surgery of the chest apart from aspirations and thoracotomies for empyema. It is, none the less, apparent that more of the fatal cases in this series died of chest complications than the records indicate. The records do show that in addition to the usual forms of therapy for shock and hemorrhage, such as infusions and transfusions, exploratory celiotomies were performed on 159 patients, with 92 deaths, or a mortality of 59.86 per cent. Of the 69 not operated, 50 died, or a mortality of 72.46 per cent.

Coming now to the inevitable and critical question: What have we learned by this exceptionally large experience that will help to reduce the frightful mortality of these wounds? Confining ourselves to the surgical treatment we find that in the course of fifteen years (1927-42) since this compilation was started, great improvements have been made not only in the surgical techniques of abdominal operations but in the pre- and post-operative care given to these patients; improve-

ments, which have undoubtedly added vastly to their comfort and to the betterment of their ultimate fate. None the less, the general average mortality of the abdominal gunshot wounds still remains very much as it was fifteen years ago. That is, the gross mortality (as shown by our continuous statistical tables since 1890) has been fluctuating more or less above and below 50 per cent with a trend to continue above rather than below this level. There are a number of factors that operate here, as elsewhere, to keep up the high mortality and that are even more effective in warfare, but which it would not be proper to discuss here. Among the improvements it cannot be denied that the intravenous infusion of salt solution which I first introduced at Charity Hospital in 1888, and the *continued* intravenous drip with dextrose (5 per cent) and without adrenalin, which I was the first to use at Touro and at Charity in 1909-10, were of the greatest advantage to these patients in the treatment of shock and hemorrhage and in relieving the dehydration and dechloruration of ileus and peritonitis. And the same may be said of the first use (1909) of the method of continued syphonage of the gastric and duodenal contents through an indwelling gastro-duodenal tube inserted via the naso-pharyngeal route. This practice since then universally adopted here and elsewhere, kept the stomach and duodenum drained by simple syphonage (in a water jug kept under the bed below the patient's level) without the need of any suction apparatus. This procedure came as a veritable godsend to these unfortunate sufferers for it accomplished its purpose (constant drainage) without interfering with the patient's ability to quaff large quantities of cooling drinks which are so necessary to relieve the parching thirst and keep the stomach clean of the foul regurgitations, so characteristic of the paralytic ileus of peritonitis. It cannot be denied that all this was progress, and, that many who would have died of shock and hemorrhage and paralytic ileus were saved by the combination of the continued "drip" and the gastric syphonage.

Unfortunately, dextrose and saline solutions like all other artificial sera lacked the colloidal stability and the vivifying biochemical qualities of blood and plasma and, therefore, failed to sustain their primary resurrecting effect on the brain and on the cardiovascular apparatus. But the intravenous drip with dextrose and saline served its primary purpose nobly,—until blood typing, and blood citration came to so simplify the practice of transfusion that the actual replacement of blood loss, became a safe, practical and universally applicable treatment. Furthermore, a simple technic and an abundant supply of "stored," "canned," or "banked" blood have brought us back to the "continued intravenous drip" of blood or plasma to replace my original dextrose "drip"

of 1909-10,—now become, since 1935, (Marriott), the maximum effort of modern medicine to replace lost blood and to restore human life.

Despite the enormous help that transfusion gives these abdominal and chest wounded patients by lifting them out of the primary perils of shock and hemorrhage,—transfusion has its limitations. For while it gives the patients an opportunity to benefit by life-saving operations, it cannot cope with the after coming infections (peritonitis, ileus, abscess and septic complication) which are the chief causes of death despite transfusion and the most skilled surgeons.

At present all eyes and hopes are turned to the sulfa-compounds and their derivatives for another miracle that may do for infection what transfusion has done for shock and hemorrhage,—thereby saving the victims of these abdominal wounds from the many graves that still yawn before them. Unfortunately these remarkable agents of a new chemotherapy have come too recently into the therapeutic arena, to justify statements of their value as preventives or controllers of the abdominal infections.

We trust that the very recent and favorable news reported by the surgeons at Pearl Harbor and by the British in the London hospitals may be confirmed,—to the effect that the local applications of the sulfanils to contaminated wounds will inhibit all bacterial activity and for so long after contamination, that excision of the contaminated tissues may be delayed almost indefinitely without spoiling the prospects of an excision with an aseptic healing. If such reports can be confirmed by an extension of the same therapy to abdominal surgery, we may expect a decided lowering in the mortality of these penetrating gunshot wounds of the abdomen, for it is, we repeat, the secondary infections that are chiefly responsible for the persistent deadliness of these wounds as they are exhibited in our hospital statistics.

Dr. Joseph A. Danna (New Orleans): The thing that impresses me most about this paper is the amount of work that Dr. Loria has put into the job. You have to have the experience of getting up the data for a paper like this to realize how much work he has put into it. I think we should be very grateful to him for having presented such a splendid resume of the subject.

As Dr. Loria has well illustrated in the study of the anatomy, the reason why the mortality of these cases is so high, and why the condition is more serious than either thoracic or abdominal gunshot wounds separately, is because it involves the upper half of the abdomen. I once stated that if I had to be shot I would rather be shot through the head than through the upper abdomen. As Dr. Loria showed you, there are a number of vital organs involved and a number of large blood vessels. It is almost impossible to go through that portion of the abdomen without wounding

one or two large vessels. So I believe that is the prime reason why these cases have such a high mortality.

There are two types of these cases. Sitting there I could not help but think of two historic instances, one of each type. Some of you were not living when President McKinley was killed. He was shot through the upper abdomen and through the stomach. They operated on him and closed the perforations and thought they had done a good job. But he died because of complications that occurred after. These complications occur late. They are due to the leakage of the suture line, or tissue necrosis, or the effect of the digestive juices on the sutures or to catgut which becomes infected. Of course, the kidney or pancreas or duodenum may be wounded and though death does not take place immediately, it will later. Then there is the second type, the acute form. When I read the afternoon extra stating that Huey Long was shot and read the description of the wound, I said "Huey's gone." He had been shot through the upper abdomen and was an example of this second type. There were multiple intra-abdominal wounds and multiple bleeding points. Hemorrhage and shock are the outstanding features. The more you work, the more your patient is bleeding; the more he bleeds, the more he is shocked. One transfusion after another is given without avail. By the time you are through you are sure he is not going to get over it.

Dr. C. Grenes Cole (New Orleans): I do not know that I have the audacity to discuss this paper after the eminent Dr. Matas and Dr. Danna have so thoroughly covered the field. However, I am going to say that we are grateful to Dr. Loria for this splendid paper, and also pleased to have contributed to this paper by allowing Dr. Loria to review our autopsy reports at the coroner's office, covering the period of some eight years during which I have been coroner of this parish.

I think Dr. Loria should be congratulated on bringing us these new determinations, and I am sure the paper has been appreciated by all as much as it has been by me.

Dr. Frank L. Loria (In closing): At this time I want to express my gratitude to Dr. Matas for having interested me in this subject soon after I finished my internship at Charity Hospital. Dr. Matas was made chairman of the Committee on Abdominal Gunshot Wounds, and he had me named secretary, when this Committee was formed in 1925. It became my duty, as secretary, to see as many of the patients operated upon, as I could—and which numbered 40 or 50—to watch the progress of each case during the hospital stay of these patients, to see them after leaving the hospital, if possible, and to attend the autopsy at the coroner's office if the person died. Through the kindness of Dr. George Roeling I not only attended each of the autopsies during the period of

this preliminary investigation, but was likewise privileged actually to perform many of them myself.

In answer to Dr. Matas' question I wish to say that I took up the study of these cases from January 1, 1927. This is about where I left off in the studies of the first series (of 112 cases), and I felt I should include each case from that date until January 1, 1942. With some reluctance I might add that this study has taken about 15 months, and there are still certain phases that I hope to analyze.

PROTEIN MALNUTRITION IN PREGNANCY*

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Experience with the marked nutritional deficiencies so frequently observed in patients on the obstetric service of the Charity Hospital of Louisiana prompted us to undertake an extensive dietary survey of a large number of pregnant women in the New Orleans area. Our interest was further stimulated by a detailed study of a small group of patients in the last trimester of pregnancy who were admitted to the hospital because of massive edema of obscure etiology. In every one of the patients in this special group the usual conditions that cause edema in pregnancy were absent, but a common factor of hypoproteinemia could be demonstrated and could be clearly attributed to protein malnutrition. The diets, without exception, were critically low in protein.¹ The literature contains many contributions dealing with the dietary requirements necessary for optimum nutrition during pregnancy, but reports on actual

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Patients in Prenatal Diet Study -
Obstetric Data (225 cases)

		<i>Negro Clinic Pts.</i>	<i>White Clinic Pts.</i>	<i>White Private Pts.</i>
<i>Number</i>		<i>100</i>	<i>100</i>	<i>25</i>
<i>Age in Years</i>	<i>Youngest</i>	14	15	20
	<i>Oldest</i>	42	44	37
	<i>Average</i>	24	26	28
<i>Parity</i>	<i>Primipara</i>	25 %	38 %	40 %
	<i>Over 5</i>	14 %	9 %	0 %
	<i>Average</i>	4 preg.	3 preg.	1 preg.
<i>Gestation</i>	<i>10-20 weeks</i>	10 %	34 %	45 %
	<i>20-30 "</i>	64 %	58 %	25 %
	<i>30-40 "</i>	26 %	8 %	30 %
	<i>Average</i>	25 weeks	18 weeks	15 weeks
<i>Average weekly income</i>		\$ 9.00	\$ 17.00	\$ 75.00

dietary investigations are rare, and nothing on the subject has been published from this locality. We were interested, therefore, in determining the actual food intake during pregnancy of a series of women from our own locality. The investigation extended over an 18 month period, ending in April, 1942.

The chief purpose of the present communication is to report the actual protein intake of a large diversified group of local prenatal patients, and to compare the protein dietaries of these women with the standard allowances set by the National Research Council and with recent reports from other localities. This communication is concerned only with an evaluation of protein; similar studies for subsequent publication are being prepared on carbohydrates, fats, minerals and accessory food factors. The principal food sources of protein, minerals and vitamins are more or less identical, and it is not amiss to state here that, as a rule, we found the diets low in protein, minerals and vitamins, high in carbohydrate and about normal in fat content.

CASE MATERIAL AND METHOD OF STUDY

Dietary investigations were carried out on 225 pregnant women. Of the total cases, the Charity Hospital prenatal clinics supplied 200 patients, of which 100 were white and 100 colored, while 25 white private patients were obtained for study through the cooperation of their physicians. The distribution of cases was such that it afforded an opportunity for comparative studies of the diets of several representative racial, economic and intelligence groups. The patients were selected without prejudice except that those with obvious complications were excluded.

The pertinent general and obstetric data are contained in table 1. It should be noted that a composite picture of a typical patient from the group study reveals that she is about 25 years old, has had three babies and is at mid-term in this pregnancy. The average weekly income of her family is \$20.00; average income per person is only \$4.00.

The dietary information was secured, analyzed and calculated by competent nu-

tritionists employing a standard method based on the patient's estimation of the food ingested. The seven-day food intake record was found to be most satisfactory. The patient at the first interview was given simple but concise instructions by the dietitian. She was told to write down in detail for one week all foods and liquids ingested each day, specifying amounts or sizes of servings in terms of ordinary household measurements such as tablespoonful, cupful, ounces, solid food in inches or large, average or small serving. The food record for seven days was checked carefully and then analyzed for the food values. By dividing the total food values by seven the average daily food intake was obtained.

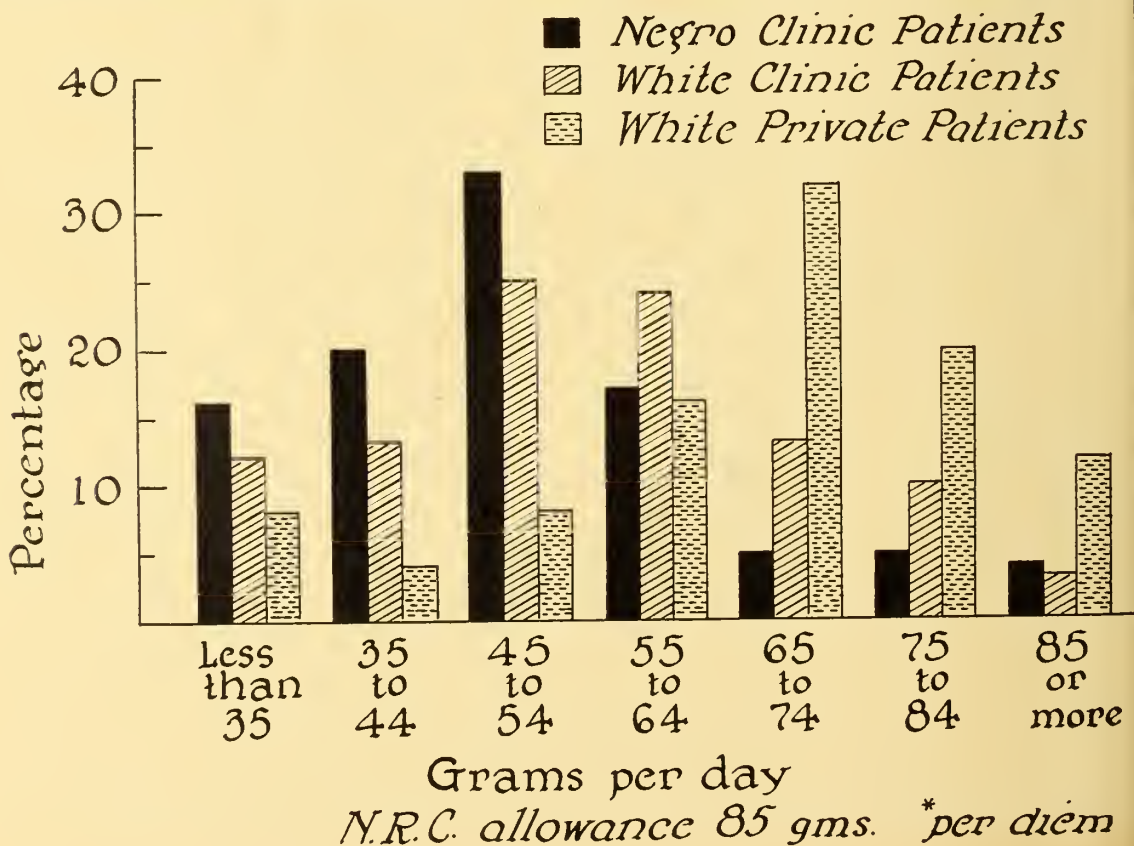
Methods of investigation which rely upon the intelligence, integrity and cooperation of the patient naturally are subject to human errors. To check the accuracy of the diet record method we hospitalized five normal pregnant women and fed them a known

weighed diet. Comparison of the actual intake of protein with the intake calculated from the diet records of the patient revealed a mean error of ± 7 per cent, with a range of plus 6 minus 4 grams. We were gratified to learn that satisfactory nutritional studies are possible, even in the lower economic and intelligence groups, and more important, that pregnant women of all social strata are highly receptive to effective teaching of diet and nutrition.

ANALYSIS OF THE PROTEIN INGESTION OF 225 PREGNANT WOMEN

The National Research Council on Nutrition recommends a daily allowance of 85 grams of protein for the average pregnant woman. Most of the patients (91 per cent) in the total series studied received less than 85 grams of protein per day; the average was 52 grams. Only 12 per cent of the private patients, 3 per cent of the white and 4 per cent of the negro clinic patients received the recommended amount (fig. 1). The

Percentage Distribution of Total Protein Intake*



average protein intake for each group was 72, 54 and 46 grams, respectively.

The weights of pregnant women vary considerably and are dependent on such normal factors as age, height and duration of gestation and such abnormal conditions as overweight, underweight and edema. To obviate the effect of these factors and conditions the food intake may be expressed in terms of ideal body weight. For this study the ideal weight was based on the age, height, weight tables accepted as standard by life insurance companies. To this weight was added an allowance for the stage of gestation. No change was made for the first trimester, a gain of half a pound per week was allowed in the second trimester and a gain of one pound per week was allowed in the third trimester.

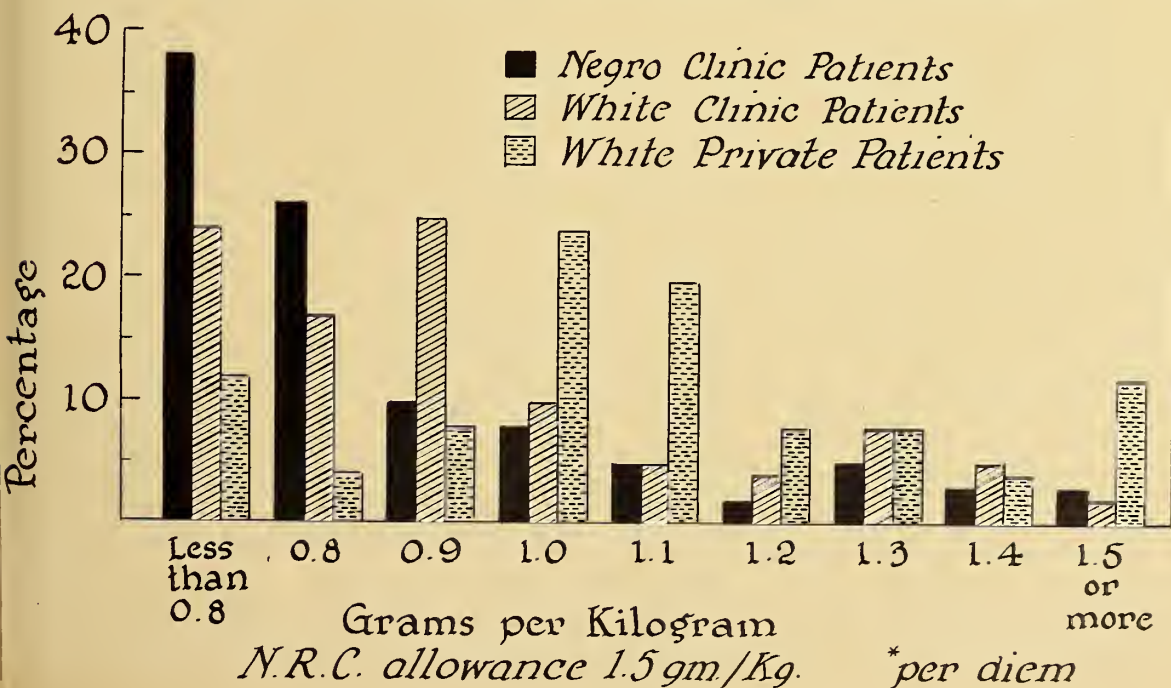
The protein intake recommended for the latter half of pregnancy is 1.5 gram per kilogram of body weight. When expressed in terms of ideal body weight, 93 per cent of the total series received less than the estimated requirement of 1.5 gram of protein per kilogram (fig. 2). The average

for the entire group was 0.91 gram, for the private patients 1.22 gram, for the white clinic patients 0.93 gram, and for the negroes 0.82 gram.

The median intake, with 50 per cent of the patients above and an equal number below the level, is perhaps more truly characteristic than the average or mean because it is less affected by extreme values. The median protein intake for the entire series was 0.93 gram. Comparative studies of the median intake for the various groups reveal that the intake of the private patients, 1.18 gram, exceeds that of the white charity patients by 23 per cent and that of the colored patients by 32 per cent (table 2). See Page 118.

Because the nutritive value of protein ultimately depends upon the amino-acid content it is essential that dietary investigations consider the quality as well as the quantity of the ingested proteins. Proteins derived from animal sources contain all the essential amino-acids and therefore are of high biologic value; vegetable and cereal foods, with few exceptions, lack some of the

Percentage Distribution of Protein Intake*
by Gram Protein per Kilogram of Weight ~



Actual Protein Intake - Gram Protein/Kilo Weight

	<i>Negro Clinic Patients</i>	<i>White Clinic Patients</i>	<i>White Private Patients</i>	<i>Totals</i>
Highest	2.1	1.9	2.0	
Lowest	.24	.33	.38	
Mean	(46. gms) .82	(54. gms) .93	(72. gms) 1.22	(52. gms) .91
Median	.86	.95	1.18	.93

important amino-acids so they are of lower biologic quality. It is recommended that the animal proteins constitute approximately 65 per cent of the total protein intake. In our series the average for the private patients was 61 per cent, for the white charity group 55 per cent and for the negro, 50 per cent. Great variations were found in the amount of the total protein intake derived from animal sources, the range was from 86 per cent to 15 per cent.

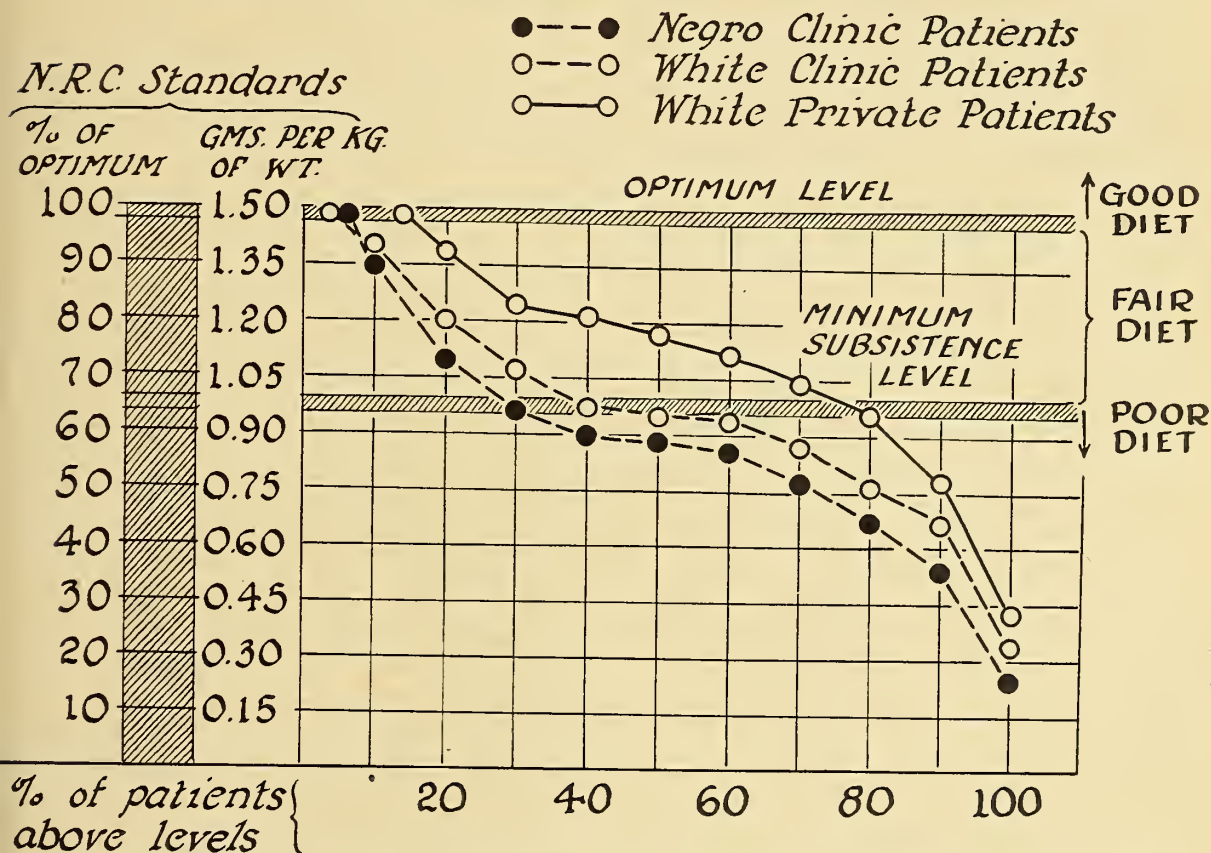
We have shown that the study revealed protein dietary inadequacies in all of the groups, with a frequency and extent which were nothing short of startling. We have also shown that the diets of the charity patients, as a general rule, were much lower in protein content than those of the private patients and that in the charity group the colored ate less protein than the white. It must not be forgotten, however, that marked exceptions to the rule occur. The highest and the lowest protein intake, for instance, was found in the colored group, yet 12 per cent of the private patients had intakes of less than 0.8 gram of protein per kilogram of weight. Neither a high I.Q. nor easy financial circumstances preclude

the possibility of a defective and deficient diet.

Each patient in whom the investigation revealed a deficiency in dietary protein was questioned concerning the cause for her poor diet. A number of reasons and excuses were given but, in general, they may be classified in the following categories: economic; ignorance; custom or habit; actual or supposed food idiosyncrasies; erroneous dietary advice during pregnancy.

The first reason for restriction in protein intake is valid to some extent because foods which supply proteins of high biologic value are relatively expensive and cannot be secured on the limited income of patients of the poorer classes. Even in this group, however, a low financial status rarely was the only cause for deficiencies in the diet. Here too, ignorance usually played a greater part. Investigations at several low cost markets proved that patients often had spent their money unwisely, actually having paid more for the food stuffs of a poor diet than would have been necessary for a good diet. Excuses other than economic, moreover, cannot be condoned; indeed, they should be condemned. Ready solution of

Protein Intake (225 cases) Compared with National Research Council Standards ~



the problem lies in an educational program of effective and intelligent nutrition teaching and this might well be undertaken as an important and integral part of prenatal care.

COMPARATIVE DATA ON PROTEIN INGESTION

The National Research Council, in establishing a set of standards for the daily intake of protein, has recommended 1.5 gram of protein per kilogram of ideal weight as the optimum level and 1.0 gram as the minimum subsistence level for pregnancy. Diets containing 1.5 gram or more are classified as good, diets containing from 1.0 to 1.5 gram are classified as fair, and the remainder are classified as poor. When our data were measured by this yardstick of protein nutrition we found 64 per cent of

our cases in the poor diet group, including 24 per cent of the private patients, 66 per cent of the white charity patients and 74 per cent of the colored charity patients (fig. 3).

When compared with other medical standards the criteria set by the N.R.C. for protein intake seem unnecessarily rigid and somewhat high. In hematology, for example, hemoglobin values of 100 per cent and red blood counts of 5,000,000 are considered excellent, but values of 90 per cent and 4,500,000 would undoubtedly be termed good. We would be inclined, from our own investigations and experience, to modify the present classification of protein intake during pregnancy by using criteria as follows:

For intakes exceeding 1.5 gram per kilo—diets excellent in protein; for intakes between 1.2 and 1.5 gram—diets good in protein; for intakes between 0.9 and 1.2 gram—diets fair in protein; for intakes less than 0.9 gram—diets poor in protein; for intakes less than 0.75 gram—diets very poor in protein.

Even with these more liberal criteria, however, more than 10 per cent of the private patients, 20 per cent of the white charity patients and 30 per cent of the colored charity patients fall into the group which ingests diets not only very poor in protein, but low to a dangerous degree.

Because surprisingly few contributions dealing with dietary investigations in pregnancy have appeared in the literature, comprehensive comparative studies of protein ingestion in the various sections of the country are impossible. Comparison with available recent data from several areas reveals, however, that protein dietary deficiencies are both more frequent and more pronounced in the New Orleans area than in the other localities with the possible exception of the mountainous region of the Carolinas (table 3).

PROTEIN MALNUTRITION IN PREGNANCY

While a marked deficiency in the protein intake can by itself readily produce a state of protein malnutrition, the condition often is aggravated and accelerated by a deficient absorption or utilization of ingested protein, or an excessive loss of protein because of vomiting, diarrhea, or proteinuria. Since impairment of the digestion with associated impairment of absorption and utilization of the dietary intake is common in pregnancy, due allowance should be made for these losses in estimating the nutritional requirements. Various diseases, infections and infestations which cause rapid protein deficits may also play important roles and should be taken into consideration. Among these conditions may be mentioned such abnormalities as the pernicious vomiting and the toxemias of pregnancy, which are peculiar to and specific for pregnancy, and also such chronic diseases, as hookworm, malaria, anemia, sprue, nephritis or nephrosis which may be associated with pregnancy and account for the loss of large amounts of protein.

Protein malnutrition is due to a protein deficit caused, as has been pointed out, by

Comparative Data on Protein Diets ~

Author	Good diet	Fair diet	Poor diet
Burke (Boston) 1941	19 %	54 %	27 %
Ebbs (Toronto) 1941.	24 %	38 %	38 %
Williams (Philadelphia) 1942.	13 %	64 %	23 %
Ross (N. Carolina) 1938.	0	25 %	75 %
Arnell & Guerriero (New Orleans)			
Colored	3 %	23 %	74 %
White clinic	2 %	32 %	66 %
White private	12 %	64 %	24 %

dietary inadequacy; the ingestion of insufficient protein to supply normal or abnormal requirements. A protein deficit in the pregnant woman lowers the nitrogen level of the body, causing an abnormal exchange of protein between the tissue cells and the blood plasma, and with the depletion of the body tissues it may lead to nutritional edema. Anemia, poor muscle tone, lowered resistance and insufficient lactation may also result from protein deficiency.

During pregnancy the average normal woman gains approximately 18-22 pounds, which represents the growth of the uterus, breasts and other organs as well as the fetus and placenta. In other words, a pregnant woman in nine months reproduces tissue almost equivalent to one-fifth of her own normal body weight. It must not be forgotten that the chief function of protein is to supply the tissue-building material of the body, that the need for this material is increased during pregnancy and that the protein deficiency in the diet of the non-pregnant woman may become dangerous when maternity intervenes. With dietary deficiencies of the degree revealed by our study and with the increased demands during pregnancy, it is surprising that severe protein malnutrition is not observed on the obstetric service more frequently.

RELATIONSHIP OF PROTEIN INTAKE TO CERTAIN OBSTETRIC COMPLICATIONS

In this discussion of the possible relationship of dietary protein to several of the important obstetric complications, we wish to emphasize at the onset that close correlation of the various factors could scarcely be expected because of individual differences in the processes of absorption and utilization of the ingested protein. In animal experimentation, for instance, it can be shown that the utilization of protein is more complete when the intake is low than when the diet is normal. The same is apparently true in humans. Other factors also are of more or less importance. We have seen that the diets of the colored patients, almost without exception, were deficient in protein. It

seems reasonable to assume, in view of other information we possess concerning this race, that colored women, because of their habitually unbalanced diets, are more resistant than white patients to dietary defects. Also, it is not at all unlikely that fares, commonly used by charity patients, would not sustain life in the case of many private patients.

In table 4 are shown the average findings of pertinent laboratory and clinical data in correlation with the protein intake. Although the results are interesting, and in some instances even striking, we must re-emphasize that they do not warrant definite conclusions regarding the effect of protein deficiencies in the prenatal diet because of the influencing factors previously mentioned and because the number of cases in some categories is small. Then too, each patient, at the beginning of the investigation, received dietary advice and instruction which, we trust, improved her nutrition and final obstetric course.

Certain obstetric complications and abnormalities which may be initiated or aggravated by protein deficiency should be briefly discussed. These are included in table 4. [*See Table 4, Page 122.*]

Anemia: We are prone to forget that hemoglobin contains protein as well as iron and that deficiencies in either or both can result in anemia. Anemias due to severe protein malnutrition are often of the hyperthromic macrocytic type and we have observed several cases in which the hematologic studies closely simulated those of pernicious anemia of pregnancy but who responded well to blood transfusions and diets high in protein and iron. While it is true that the principal food sources of iron and protein are quite similar, the components vary considerably in different foods, and correction of the iron deficiency by means of diet or medication without correcting the associated protein deficiency will not improve the anemia.

In the series studied we found the intake of iron somewhat higher than that of pro-

Dietary Correlation with Pertinent Laboratory and Clinical Data ~

	<i>Protein Intake</i>		
	<i>Good</i>	<i>Fair</i>	<i>Poor</i>
<i>Blood studies</i> (<i>Averages</i>)	(5 cases)	(20 cases)	(20 cases)
Hemoglobin	11.0 gms.	9.1 gms.	8.4 gms.
Serum protein	7.1 gms. %	7.1 gms. %	6.3 gms %
<i>Complications</i> (% of cases)	(5 cases)	(55 cases)	(140 cases)
Preeclampsia	0	5.5 %	8.5 %
Edema only	0	10.8 %	40.0 %
Maternal mortality	0	0	0
Maternal morbidity	0	3.6 %	8.6 %
Fetal mortality	0	1.8 %	5.7 %
<i>Average weight gain</i>	22 lbs.	27 lbs.	26 lbs
<i>Average birth weight</i>	7.2 "	7.2 "	7 "

tein, but the parallelism between the two was fairly close; inadequacy in one usually meant inadequacy in the other. The hemoglobin average of the poor diet group, 8.4 grams (56 per cent), is 17 per cent lower than that of the good diet group, 11 grams (73 per cent).

Nutritional Edema: Although contributory factors play roles of varying importance, the distribution of extravascular, extracellular water is chiefly dependent upon the plasma protein concentration of the blood. Edema is likely to occur whenever the colloid osmotic pressure of the serum proteins is less than 20 cm. of water, at which level the serum protein concentration is usually less than 5.5 grams per cent and the serum albumin concentration is less than 2.5 grams per cent.

In our detailed study¹ of eight pregnant women exhibiting severe nutritional edema, the average value for serum protein was 4.2 grams per cent, serum albumin 2.03 grams per cent, serum globulin 2.16 grams per cent, albumin-globulin ratio 0.94, and the average calculated colloid osmotic pressure was 14.21 cm. of water. Investigation of the diets revealed an average protein intake of only 0.54 gram per kilogram of body weight. The edema in every one of these cases was due to a hypoproteinemia caused by an extreme protein deficit. Correction of the protein deficit by means of high protein diet, blood and plasma transfusions and casein digests administered parenterally, resulted in every instance, in profuse diuresis and clinical improvement. The average weight loss, representing elimination of

edema fluid, was 8.5 kilograms, the range 7.4 to 19 kilograms. (fig. 4).



Nutritional edema in pregnancy with typical swelling of the vulva, thighs and abdominal wall.

In the series presently studied the average serum protein concentration was lowest in the cases in the poor diet group. It is interesting to note that so-called idiopathic edema of demonstrable degree occurred in patients in this group with a frequency four times greater than in those in the fair diet group. We found no direct correlation, however, between the serum protein levels and the degree of edema.

Specific Toxemias of Pregnancy: There is considerable evidence pointing to a close relationship between protein metabolism and the toxemias of pregnancy. By no means do we wish to imply that we consider protein malnutrition the primary factor in the causation of pre-eclampsia and eclampsia. Neither do we believe that protein dietary adequacy alone will prevent or cure the condition. From our own experience we are convinced, however, that the patient in a state of good nutrition not only is less likely to develop toxemia but also is far more amenable to treatment. It is perfectly possible, moreover, for protein malnutrition and toxemia to coexist, and the

edema in these cases may be aggravated and intractable because of the associated hypoproteinemia. Treatment of both conditions is essential.

To restrict meat and eggs in the diet of pregnant women has been common medical practice and is still done to a considerable extent. The reason for this is that these protein foods have long been associated with the toxemias of pregnancy, and were and still are considered by many physicians to be one of the causes of toxemia. Recent investigations have definitely disproved that a liberal intake of protein is a cause of toxemia. On the contrary, we can say with reasonable certainty that all evidence points to the contrary.

Weight: The average maternal weight gain during pregnancy was less in the good diet group than in the fair and poor diet groups. Some of the added weight might be explained by edema but an analysis of the food charts revealed tendencies toward high ingestion of carbohydrate and fat when the protein intake was low. It is reasonable to assume that protein foods satisfy appetite earlier than the others and make it content with fewer calories. In this respect we have found high protein diets of value for weight restriction during pregnancy.

The average birth weight for the babies in the three groups was approximately the same. We may conclude that the fetus in utero is a true parasite drawing nutrients from the mother, even to the extent of her detriment when necessary, and that, at present, no method is known by which birth weight can be controlled by dietary means.

Mortality and Morbidity: Subclinical nutritional deficiencies are dangerous during pregnancy not only because they may lead to actual deficiency diseases but also because they definitely lower the general as well as the specific resistance of the patient. Normal pregnancy and parturition place tremendous strains on the individual and these are increased manifold by the presence of complications and abnormalities and the traumatic effects of operative delivery. The prognosis often is dependent primarily

on the nutritional status of the patient. In placenta previa associated with considerable blood loss, for instance, the hazards are greatly increased if the patient suffers from an antecedent anemia.

Recent investigations in natural immunity have proved that antibodies are protein substances which are synthesized from proteins eaten as food, and that dietary protein deficiency, furthermore, causes the body to lose its ability to make the protective antibodies. If this ability is lacking there is an increased susceptibility to many infections which are readily tolerated when sufficient protein is ingested to enable antibody production.

In considering the problems of maternal and fetal mortality and morbidity, it seems probable that attention in the past has been focused too exclusively on the obstetric complications and abnormalities and not enough on the general nutrition of the patient. We feel certain the future will demonstrate the importance of diet and nutrition as primary factors in decreasing mortality and morbidity.

DISTRIBUTION OF PROTEIN IN FOODS

In undertaking a survey of dietary protein, the physician should bear in mind that the metabolism of protein is unique in several ways. The protein requirements of the body, unlike those for carbohydrate and fat, can be supplied only by protein adequacy in the diet. Whereas the body can utilize excess protein to make glucose, a carbohydrate, and glucose to make a fat, it cannot reverse the process. Neither can the body manufacture for itself a single one of the essential amino-acids, and these will be lacking unless the protein foods contain the particular acids when eaten. Because no substitution is possible in protein metabolism, it is obvious that the diet must contain enough protein to furnish all of the essential amino-acids in sufficient amounts.

In order to evaluate the protein intake with accuracy and to make the adjustments necessary for dietary adequacy in protein, it is essential for the physician to know the quantity and quality of the protein content of various common foods. The values for

some of the outstanding food sources of protein are illustrated in fig. 5. (*Page 125*). There is great variation in the protein content of food stuffs; in some it is so low that enormous quantities must be consumed in order to yield even a subsistence level of protein. (*See "Supplementary data" page 126*).

In general, the physician should prescribe prenatal diets containing the optimum quantities of protein recommended for pregnancy. Of greater importance, however, he should insist that the diets include protein foods of the highest biological quality, specifically, the flesh proteins derived from meats, fish and fowl, the protein of milk and milk products and eggs. The animal proteins may be supplemented in the diet by the inclusion of plant proteins from vegetable and grain sources. The proteins derived from peas, beans, lentils, cereals and bread are, as a rule, of lower biologic value, but the cost is so low that large quantities may be purchased and used as "poor man's meat." Of particular interest to the South, if recent investigations are confirmed, is the evidence that the soy bean, cottonseed, peanut, almond and cashew nut contain complete proteins.

The protein requirement should be covered adequately if the daily food allowance during pregnancy provides the following:

- One quart of milk.....30 grams
- A liberal serving of meat.30 grams
- One egg..... 7 grams
- Cereals (1 serving)..... 8 grams
- Bread (3 slices)..... 9 grams
- Vegetables and fruit
(2 servings).....10 grams

This diet yields approximately 94 grams of protein, including 67 grams of protein of high quality. When restriction of meat is necessary, for financial or other reasons, larger quantities of plant proteins from diversified sources should be used and possible deficiencies prevented by insisting that the diet contain at least one quart of milk or its equivalent in milk products.

SUMMARY AND CONCLUSIONS

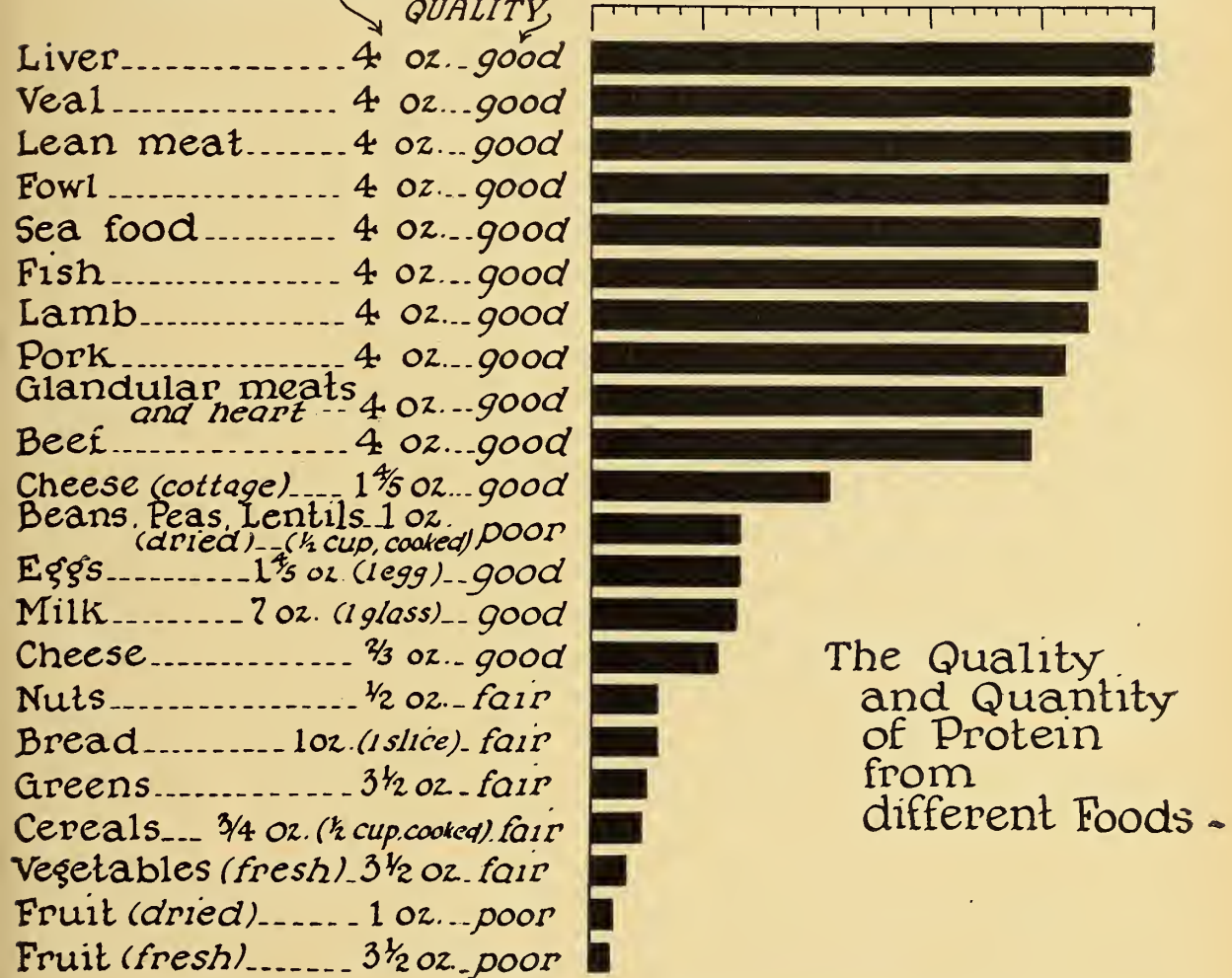
1. The actual daily protein intake of 225 unselected antepartum patients is presented. The group included private pa-

SELECTED SERVING
Edible portion

AMOUNT of PROTEIN in GRAMS

5 10 15 20 25

QUALITY



tients as well as white and colored charity patients, and thus permits comparative studies of food habits.

2. Protein dietary defects and deficiencies were found with startling frequency. Dangerously low intakes were discovered in 30 per cent of the colored, 20 per cent of the white charity and 10 per cent of the private patients.

3. Diets good in protein were infrequent. Only 3 per cent of the colored, 2 per cent of the white clinic and 12 per cent of the private patients ingested the optimum protein allowance recommended by the National Research Council for pregnancy.

4. Pregnant women of the New Orleans area seem to eat less protein than their sisters in other sections of the country.

5. The subclinical and clinical effects of protein malnutrition are discussed. Trends are pointed out but definite conclusions must await further investigation. It is obvious, however, that the greatest single factor in maternal mortality lies in the resistance of the patient and that resistance is dependent primarily on the state of nutrition.

6. Pregnant women should ingest a diet adequate in protein. The protein should be in a readily assimilable form, should be

from animal as well as from cereal and vegetable sources, and should contain the necessary amino-acids.

7. Adequate prenatal care should include a careful dietary survey, with particular emphasis on protein, minerals and vitamins and the prompt correction early in pregnancy of any dietary deficiency. By bearing in mind a few basic facts any competent physician can give effective instruction and advice on diet and nutrition.

SUPPLEMENTARY DATA

SOURCES OF PROTEIN

Amount of food that contains 60 grams

Food	Amount
Meat	2/3 pound
Fish	2/3 pound
Poultry	2/3 pound
Eggs	8 pounds
Milk	2 quarts
Cheese, Cheddar	1/2 pound
Beans, navy, dry	2/3 pound
Beans, soy, dry	1/3 pound
Peas, dry	2/3 pound
Bread, white.....	1 1/2 pounds

REFERENCE

1. Arnell, R. E., and Guerriero, W. F.: Nutritional edema in pregnancy, *Am. J. Obst. & Gynec.*, 43:467, 1942.

DISCUSSION:

Dr. E. L. Zander (New Orleans): The current general interest in the subject of diet and nutrition has made such terms as "optimum diet", "hidden hunger" and "subclinical food deficiency" familiar not only to the physician and dietitian, but to the public as well. Federal government agencies and private industry are uniting to spread the gospel of good health through optimum nutrition. In order to avoid inaccuracies, half-truths and mis-statements, it is imperative that physicians be actively in the vanguard of nutrition research and education. They must know not only what patients should eat but what they do eat and be able to give dietary advice in simple, effective terms.

Pregnancy imposes special demands for protein food. If a deficit in intake continues too long, serum albumin is reduced so far that the colloid osmotic pressure of the plasma is decreased to a point where edema appears. Reduced serum protein is an indication for emphasis on higher protein intake.

In answer to what type of protein is required, animal sources are advisable for a large share of the protein if the total protein intake is small and

plant protein usually insufficient unless supplemented by milk and eggs.

Chief sources of concentrated food protein are meat, milk products (except butter), eggs, cereal grains, peas, beans and nuts.

For regeneration of blood proteins, liver and milk are considered unusually valuable. Liver contains iron and milk casein. In the presence of marked albuminuria the protein intake should be generous. If non-protein nitrogen or urea nitrogen of the blood is definitely elevated there is some benefit from restricting protein intake. If there is no evidence of azotemia protein restriction is of questionable value. When renal disease is marked by excretion of much protein and nitrogen retention, better to give sufficient protein to replace serum albumin loss.

It is possible to reduce weight with safety in the pregnant woman planning the diet so that most of the fat metabolism is secured from the depots in the patient's body rather than from food. Protein intake need not be more than ordinarily high. Carbohydrate must be provided in adequate amounts to prevent ketosis.

The authors' contribution gives us a comprehensive idea of the common deficiencies in the diets of pregnant women. It represents a detailed study in a virgin field. By bearing their results and conclusions in mind we can give better prenatal care.

Dr. Earl Conway Smith (New Orleans): When I see such an excellent presentation as this I always try to find out some way to apply it practically in my own practice.

This presentation is but one phase in the analysis of nutrition in pregnancy in this locality. The physiologic aspects of protein deprivation as evidenced in this report are definitely related to social and economic factors. Likewise it has a definite bearing upon maternal and fetal morbidity, if not upon mortality. This indicates the necessity of adequate prenatal instruction with special reference to the diet, and in this connection, I do not refer only to protein but to other essential dietary factors as well.

The average physician is not much interested in the diet of his patient unless there is some specific condition that makes the diet an outstanding part of the therapy. Furthermore, social, economic, and locality are factors that make it difficult for certain classes of patients to obtain the essentials of diet. If this essay is any index of the state of nutrition today, then we can expect greater deficiencies in the future if specific measures are not taken to alleviate the causes.

I have adopted a policy of obtaining a sample diet for one week from my private patients when they first come for antenatal care. This permits me to see the major discrepancies and suggest corrections for a better balanced diet. Patients as a whole do not know what a well balanced diet

consists of. It remains then for the physician to be able properly to advise a patient along correct dietary lines, for not many families can or will obtain advice from expert dietitians.

If there were not serious discrepancies in the diets of most everyone, we would not have been deluged by the wave of vitamin propaganda of today. Certainly, for the average diet the essential requirements can be obtained from the foods we eat, if we only know what to select, and that is indeed simplicity in itself. In regard to general foods, I mean specifically proteins, minerals, and vitamin-containing foods, we know the kind and amounts required and see that the patient gets them by simply requiring other sample cross section diets at later dates during pregnancy. Some of the diets submitted by my patients of the higher financial bracket were deplorable as well as some from the lower bracket. It was astonishing to note in some instances that the bulk of caloric requirement was made up essentially of carbohydrates with a deficiency of protein, and this is dangerous.

I have not had any serious case of edema occur among my private pregnant women, only the occasional swelling of the feet and legs in the last trimester, and I do not recall a single case in which the swelling was so great that a larger size pair of shoes had to be obtained. And this is simply because of better balanced diets, with particular attention to adequate protein, control of weight gain, and of salt and water intake, and with a serious attempt to prevent anemia.

Dr. R. E. Arnell (In closing): Misinformation concerning correct dietary principles is responsible

for many cases of malnutrition. A recent case illustrates the point. The patient, a young primipara in the seventh month of gestation, was complaining bitterly because her activities were curtailed by edema of the feet, angles and legs. Discrete questioning revealed that conscientious prenatal care including dietary advice had been given her by her physician. He also had furnished a printed form with sample diets for pregnancy. The patient, however as often happens, disregarded completely the advice of her physician, placing herself in the hands of her mother who, because she had had several babies, considered herself an expert in such matters. Meat and eggs were considered harmful and were eliminated from the diet; milk was the only protein allowed. The patient was instructed to tell her story to her physician. He corrected the deficiency immediately and within a short time the edema had disappeared completely.

Since the advent of World War II the science of nutrition has made great advances. It is now generally recognized that ample foodstuffs and good food habits, not only for the armed forces but for the civilian population as well, will be major factors in winning the war. The physician, the dietitian, the nurse must accept the responsibility for disseminating the gospel of good nutrition; it must not be relinquished to the politician or business concern.

In conclusion, we take this opportunity to express our appreciation to the many individuals who aided us throughout this study, particularly Drs. Zander and Smith and the Dietary Department of Charity Hospital.

THE IMPORTANCE OF EARLY DIAGNOSIS IN GLAUCOMA*

HENRY N. BLUM, M.D.

New Orleans

This paper is intended for all who are engaged in the practice of medicine but especially for the general practitioner who is not familiar with glaucoma and consequently does not know the damage done by this disease nor does he know what an important role he could play in dealing with this problem which does not come in epidemics but is with us everywhere and at all times. Possibly the time may come when we may be able to recognize a pre-glaucomatous patient

and be therefore able to prevent a great many cases of the disease. It has been said that when we are able to recognize tetanus from its symptoms the patient is already in the terminal stage. This may also be true of certain forms of glaucoma.

Ophthalmology has made great advances in the last quarter of a century as the study of general medicine has also done. Ophthalmologists were the first to organize a Medical Board of Examiners and this step has been followed in all the rest of the branches of medicine. The time will soon come when a certificate from one of these boards will be nationally recognized as a desirable possession for one who wishes to be known as a specialist. Along with the increased knowledge of ophthalmology has gone the steady increase of knowledge concerning glaucoma. Glaucoma is not only a danger-

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, April 28, 1942.

ous disease for eyesight, but because of its very complexities it is a particularly interesting condition. There has been a tremendous amount of research done on the whole subject in relation to its causes, its pathology and its treatment. There has been a steady increase in the ability to make an early diagnosis. The ability to recognize certain anatomic changes by the introduction and use of the slit lamp and the gonioscope has given valuable information concerning glaucoma in all of its phases, and enables us to explain its origin and development and to indicate the treatment that should be followed. Not only has there been improvement in operative procedures by new methods adopted for the relief of increased intra-ocular tension acting upon principles long established, but also by new drugs it has been made possible to combat hitherto hopeless cases.

I think there can hardly be a medical subject which has received more attention from ophthalmologists and their societies than the topic I wish to discuss. I should like to reiterate that glaucoma is a complex subject. Its diverse forms, symptoms, differences in pathology, differences in etiology, and mode of development, and differences in treatment make its study constitute a tremendous volume. Lately we have begun to consider more earnestly and more systematically, effective measures to unite efforts to combat this disease in large communities where it is practicable to accomplish something realistic. There has been an awakening of interest on the subject in large cities where a great deal of good is expected to develop in conservation of vision by the elimination and prevention of glaucoma and by a study of methods by which this disease can be best dealt with once its development has been recognized. This study will of course be best done by efforts of the profession in its entirety.

If what I have said is true it should not be necessary for me to apologize for reading this paper at our State Medical meeting. I am appealing to you to cooperate with the specialist when once a suspicion has been aroused in order that time will operate to

the patient's advantage. I wish to emphasize the fact that the recognition of glaucoma in some of its forms presents great difficulty. When I tell you how different the forms of this disease may be but that they all possess one diagnostic sign, increased intra-ocular tension, and then tell you in the next breath that it may not always be possible to elicit this fact you may be able to understand what a problem glaucoma is and why it is a subject of perennial concern. There is no present purpose to make ophthalmologists of all of you and I know that you will not be able to recognize all cases of glaucoma which come to your office. I am trying to make you glaucoma conscious and am asking you to have a suspicion in your mind when a patient tells you that his sight is dimmed occasionally, that he has noticed rainbows when looking at lights, and that he sometimes has a unilateral or bilateral headache for which household remedies give only slight relief. These symptoms sometimes are associated with an emotional upset, and these emotions may be pleasant or unpleasant. These people frequently complain of inability to keep their eye glasses clear and that they find it necessary frequently to change their lenses.

PATHOGENESIS

We know that there is an entity in which an eye of a certain form, associated with a general condition in which vascular state, nervous instability, racial characteristics, all combine to form a subject who will, under certain circumstances, develop slowly or suddenly a positive glaucoma. It is important that the general practitioner should be able to recognize this condition. I know this is asking a great deal when I consider that it is sometimes difficult for ophthalmologists to do so in all cases. By the recognition of pre-glaucomatous states it may be possible that proper and adequate steps could be undertaken to prevent the development of actual glaucoma.

It is more practicable at this state of our knowledge that all forms of glaucoma should be recognized early and handled properly before serious damage has occurred. It can surely be said of glaucoma

as of syphilis that it is protean in its manifestations. It is also protean in its forms. It is this latter characteristic that I wish to discuss now. Glaucoma has been divided into several classes according to its original mode of occurrence, duration, present state and association with other eye pathology or with general disease. We all know of the parallel columns in our school text books wherein certain characteristic symptoms and signs are outlined in order to be able to differentiate acute glaucoma from acute iritis. This is important for purposes of instruction in calling the students' attention to two serious eye diseases in which appropriate treatment for one would be inappropriate for the other in most cases. To be able to know acute glaucoma is very important but the cases of chronic glaucoma which are not recognized early are much more common and therefore of more interest in this present discussion. Let us try to improve our knowledge of this latter disease. If I can contribute in the smallest part to this purpose I will have been amply rewarded for the difficulty experienced in the preparation of this totally inadequate paper.

We have all been taught that there are certain eyes which are more prone to be affected by glaucoma than are other eyes, because of the fact that far-sighted or hypermetropic eyes are small and that in the anterior part of the eye, where most important eye drainage occurs, there is crowded into a small space a proportionately large crystalline lens and a large ciliary muscle. The cornea of such an eye is also small and by its small size enables us to recognize eyes which have predilection for glaucoma, because the smallness of the diameter of this structure contributes toward circulatory embarrassment produced by the comparatively large size of its enclosed ciliary body, and lens at the angle of the chamber where iris cornea and sclera unite, and where drainage occurs. Under ordinary circumstances the drainage system of the eye is adequate. Should emotion produce its sudden flow of blood to the rich vascular system of the ciliary body, iris ob-

struction to drainage at this point may result and produce a situation where acute glaucoma can easily follow. The glaucoma thus produced in the acute form and in such a manner also has its fellow in the subacute form or the chronic congestive form wherein the etiology may be akin to acute glaucoma. The period during which the disease is being established covers a longer time in the latter.

The more chronic forms of glaucoma may be sometimes associated with pathology in other parts of the body, and arteriosclerosis and arterial hypertension have been considered by some to play an important part in the development of chronic simple glaucoma. Lues no doubt plays an important part and I believe that focal infection producing a toxemia responsible for vascular changes, no doubt, has a great deal to do with the production of these cases.

SPECIAL EXAMINATIONS

Anatomic studies made with the slit lamp and corneal microscope in living eyes show certain characteristic changes in the angle of the anterior chamber. Anterior synechiae, wherein the attachments form from exudate from the anterior iris, cause embarrassment of drainage through the canal of Schlemm. This is more easily seen with a gonioscope. This form constitutes a very important class of glaucoma and its study explains the wisdom of the modern glaucoma operations. In these cases the filtration operations or the deep basal iridectomies when properly done promise a more certain cure than the old methods used before modern research had established the fact that only compensatory drainage will give permanent relief.

A general practitioner should be able to recognize a shallow anterior chamber. He should acquaint himself by observation of normal eyes what a normal depth should be. The anterior chamber is that part of the eye which lies between the anterior surface of the iris and the posterior surface of the cornea. The general practitioner can learn in an approximate way to determine the normal intra-ocular tension of an eye so as to be able to recognize an eye in which the

tension is increased. He is not expected to use the tonometer to measure accurately the intra-ocular tension but he can, by careful digital palpation when the gaze is directed down, get an idea of what the tension is. This is an accomplishment not easily acquired. Since general practitioners are not accustomed to dealing with so delicate an instrument as the eyeball, the technic of palpation of the eyeball for measuring intra-ocular tension must be practiced often and with care in order to be able to determine the intra-ocular tension even with approximation.

SUMMARY

Let it be understood that when ophthalmologists bring to the attention of their colleagues a matter of as much importance as glaucoma there is not much selfishness in the act. We hope that the profession gives us credit for being conscientious and unselfish in our assertions. As a matter of fact the ophthalmologist treats these patients later. The trouble is just there, as in many instances it is too late. It might be very well that the general practitioner having heard this talk or possibly having read it in a journal may know a little bit more than he did before about this important subject. It might also be that he will not have learned much. I will still accomplish something by having reminded you that there is such a condition as glaucoma and that people have it in their eyes.

I hope that this paper will elicit a full discussion in order to emphasize the importance of the subject.

DISCUSSION

Dr. W. R. Buffington (New Orleans): Dr. Blum has brought to your attention a most timely subject. The control of glaucoma is becoming more important in preventing increasing impairment of vision and blindness in many people. Until recently, since the middle ages, trachoma has been responsible for great suffering and blindness among the people of the world. In countries like the United States, England and France, the disease has all but disappeared, due to improvement in living conditions and scientific correction of qualitative and quantitative diet deficiencies.

Acquired and congenital syphilis has been a leading factor in causing eye diseases and blindness since remote antiquity. Modern treatment,

as carried out in large cities like New Orleans where centers have been established for giving treatment, those syphilitic eye diseases causing blindness, namely, iritis, interstitial keratitis and choroiditis, are no longer a public menace. The frequency of these diseases, due directly to lues, have been reduced at least 70 per cent in the last 20 years.

While scientific medicine is making great progress in preventing and curing many of the horrible diseases of the past—robbing them of their terror—the frequency of glaucoma is steadily increasing. Likewise defective vision and blindness as a direct result of this disease are also increasing.

Glaucoma is one of the old diseases known since the middle ages. It was even responsible for Milton's blindness. The cause of primary glaucoma is still unknown. It comes in two forms: First, acute inflammatory or congestive glaucoma, which is a most painful disease due to the rapid and sudden rise of intra-ocular tension. This type can sometimes be so malignant that vision can be destroyed in a few hours to a few days. The second type, known as non-inflammatory or simple glaucoma, is so insidious in its progress that the patient is often unaware of it until the vision of one eye is gone and the other seriously impaired. It comes like a thief in the night. It is therefore important that all of us be always on the look out for this disease.

Glaucoma is not due to infection, not to essential hypertension, neither is it a reaction to dietary or vitamin deficiency. The manifold prodromal symptoms of glaucoma, namely, eye discomfort, blurred vision, rainbow colors around lights, contraction of the field of vision, shallowing of the anterior chamber, cupping and atrophy of the optic disc, ending finally in blindness if not corrected, are due to one cause—increased intra-ocular tension.

The predisposing causes of increased intra-ocular tension are first hereditary and familial. For instance, I have seen the grandmother, the mother and the son affected at the same time. It is not unusual, in fact it is the rule, to see more than one member of the family affected at the same time. I have under treatment now, three persons in one family and four in another. It is said that certain races are predisposed to primary glaucoma. I seriously doubt this assertion. It is true that the small cornea and the shallow anterior chamber of certain individuals constitute an anatomic predisposition to glaucoma.

I believe that the disturbance of the sympathetic nervous system is an important factor. The general nervous system plays a part in the production of acute glaucoma. It is not unusual to see persons leading a normal life, whose intra-ocular tension is controlled easily by mild miotics, have a sudden flare up with increased tension following some emotional upset. Recently I saw a lady, whose tension had been easily controlled, have a

violent attack, with tension rising from 20 to 80 in a few minutes, due to the death of a near and dear relative. Fright, fatigue and irregular habits can produce acute attacks.

When you consider the nervous tension of modern life—speeding along at 60 miles an hour—you have the reason why glaucoma is rapidly increasing. All doctors, in consultation with patients who complain of symptoms referable to the eyes, should learn to take tension with the fingers. It is a simple matter and a little experience would give them good judgment. If the tension is elevated, the patient should be passed on to some one competent for treatment.

I will not go into the treatment of glaucoma, because that is a field in itself, but early diagnosis is a most important factor in staying the progress of the disease. In many cases, when the disease is first discovered, simple myoptic treatment may control the tension throughout life, maintaining a normal vision. When glaucoma becomes advanced, it becomes a surgical problem, therefore early diagnosis is most important.

Dr. Noel T. Simmonds (Alexandria): One additional point I would like to bring out is that usually cataracts develop in glaucoma. The name glaucoma is derived from a Greek word meaning green eye. The greenish reflection in the pupil is due to a sclerosing cataract. This sclerosing cataract, although a complication of the glaucoma, is frequently mistaken for the primary condition and the patients are told to wait until the cataract matures before consulting an ophthalmologist. Most of the time, in giving this advice the physician is right. However, unfortunately most of us have seen patients who have been advised to wait until the cataract matures and when they finally decide to consult an ophthalmologist we find that instead of having a simple cataract that the patient has a case of absolute glaucoma with a complicating glaucomatous cataract, for which nothing can be done.

Dr. Rudolph Matas (New Orleans): After hearing Dr. Blum's excellent paper I feel indebted to him and to the ophthalmic group for keeping us so interestingly and profitably in touch with the progress of oculistry in dealing with the problem of glaucoma—a subject of vital importance to us surgeons, who literally "live through our eyes."

Dr. Blum has stressed the insidiousness of the disease and the ease with which the early signs and symptoms of the subacute cases can be overlooked. Much good is being accomplished by widespread campaigns of the National and other societies organized for the prevention of blindness, saving many eyes in the same way that the present vigorous crusade against cancer is undoubtedly saving many lives by insisting on the importance of early and periodic examinations in order to help nip the disease in the bud. On the other hand much distress may be caused by errors in

diagnosis as I know in the case of a young medical graduate who was driven to distraction and his career temporarily shattered when told that he had glaucoma on the basis of a deeply cupped optic disc. Nearly thirty years have elapsed since that time and his vision has remained essentially normal, despite the deep cupping of the disc—which has remained as a congenital defect. This however is no argument against the frequent periodic examination of the eyes by competent ophthalmologists who are now infinitely better prepared to make differential diagnoses than the usual glass fitters or optometrists who have had no training or experience in the pathology of the eye in its organic and systemic relations.

Better that the error should be by excess of caution than by failure to recognize the disease at a time when it may be remedied and blindness prevented. Better, a thousand times, that a benign tumor of the breast should be extirpated by an unnecessary radical operation than to allow a malignant growth to remain undisturbed in the assumption that it is a benign or innocent tumor.

Dr. Noel T. Simmonds (Alexandria): We who went to school under Dr. Matas were told that he was a specialist in every line. I feel that he has qualified in his discussion of glaucoma. We appreciate his discussion and his interest in our paper and we want to thank him on behalf of the eye, ear, nose and throat section.

Dr. Henry N. Blum (in closing): I know by long experience that after looking up books of reference you can get at last what you want by going to Dr. Matas. That is true about everything else, in medicine and in literature. What Dr. Matas says is perfectly true. Of course, even ophthalmologists make mistakes. We can be perfectly sure of our diagnosis if the patient is observed for a long time. I remember a case many years ago, an elderly woman who was observed for several years, and never at any time she was seen did she have increased tension, yet she had glaucoma. If her tension had been taken at the bedside, however at 5 a.m. instead of in the office at 10 and 11 o'clock, elevated tension would have been discovered. Then again we know that what may be normal for one eye may be abnormal for another.

There are other methods of making a diagnosis in glaucoma than by observation of the eye grounds and discovery of glaucomatous excavation and also by increase in intra-ocular tension. Field changes with a large tangent screen will reveal typical changes in the visual fields, if properly and carefully done, and, of course by repeated observations. We know that in some cases of glaucoma elevated tension cannot be discovered at any time and if we wish to find it we use means of stimulating the circulatory changes. We know that if we place some of these patients in a dark room

with the pupil dilated, it is more apt to show increased intra-ocular tension.

We sometimes can prevent establishment of glaucoma by treating patients early, if gotten in the pre-glaucomatous stage. But it cannot be cured by neglected treatment either operative or medical. If it is glaucoma, the patient will eventually go blind if he neglects his eyes.

CANCER OF THE LARYNX*

F. E. LEJEUNE, M. D.

AND

P. J. BAYON, M.D.

NEW ORLEANS

There can be little disagreement with the statement that malignant disease is definitely increasing. Whether this increase is absolute or relative is a question which is still unanswered but the appalling fact remains as an obstacle to the progress of medicine. It is true that heart disease continues as the largest cause of death in this country but cancer now occupies second place in that grim listing.

Of all malignancies, about 4 per cent occur in the larynx and adequate warning is usually present but unfortunately this warning is too often pathetically ignored. Here, unrecognized early carcinoma is the more tragic when it is considered that the early lesion offers a larger percentage of cures than carcinoma occurring in any other organ of the body.

Clerf states that 40 per cent of the cases of cancer of the larynx are so far advanced when first seen by the laryngologist that no type of surgical operation can be offered them. Certainly something can be done to alter this deplorable situation; and it does not appear too sanguine to suggest that this could be achieved by comparatively simple means. This would involve the cooperation of three groups. The laryngologist, as the member of the movement with the gravest of the responsibilities, should so spread the gospel of early recognition of carcinoma of the larynx that all coming within his sphere will learn to recognize and respect its symp-

toms. The general practitioner, having been appraised of these symptoms should lose no time in urging laryngoscopic examination when such symptoms are present. And finally, the public at large should be made to develop its present state of cancer-consciousness to a higher degree to the end that it will seek early and frequent examinations.

Cancer of the vocal cord is a strictly localized disease which in its early stages spreads very slowly on account of the sparse lymphatic distribution at the anterior half of the larynx. Persistent hoarseness should make us suspicious of cancer of the larynx, but this does not imply that every case of hoarseness, or every lesion found within the larynx is a carcinoma. Tuberculosis and syphilis are frequently confused with cancer and must always be eliminated. An operation of the larynx should never be attempted without first performing a biopsy to establish and verify a diagnosis. In innumerable biopsies we have not seen any deleterious results consequent on this procedure. The clinical picture must be studied carefully and if it is suspicious of carcinoma, repeated biopsies may be indicated. Recently we had occasion to see such a case which clinically appeared to be carcinoma. However the pathologic report was chronic inflammation. It was not until the third biopsy was performed that we were able to obtain a report of malignancy. Had we accepted the first report the patient undoubtedly would have returned home feeling secure, only to be rudely informed at a later date that the condition had probably progressed beyond the stage where operation could be of any help. Carcinomatous lesions occurring in the larynx are necessarily seen in various stages of development and the method of operative approach advocated to eradicate the malignancy varies accordingly. On this basis we feel that an arbitrary division of these cases into four groups will simplify the classification.

The first group represents the earliest and most definitely limited of all the lesions encountered. In it are placed carcinomas confined to a small portion of the surface

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 28, 1942.

of one vocal cord. The tumor may be only slightly larger than a millet seed or it may be as large as a match head or a pea; but it is essential that normal tissue be observed on all sides. Such a lesion is generally seen on the free border of the cord, somewhere near the junction of the anterior and middle third. From these qualifications, it may be readily concluded that this group includes only a very special type of growth which unfortunately is not seen often enough because of delay in laryngologic consultation. When, however, it is encountered much can be offered. Cure of the disease without mutilation and usually without the necessity of occupational or social readjustment can be promised with only reasonable reservation.

We believe that with suspension laryngoscopy, growths fulfilling these requirements can be completely and successfully removed perorally by intralaryngeal dissection, following which electrocoagulation of the base may be employed as added insurance against recurrence. This method affords an adequate approach to the larynx; it is simple and safe (in most cases); it is as accurate as removal by means of laryngofissure; it is followed by very little postoperative reaction; and the vocal end result is superior to that obtained by any other method of operation for carcinoma of the larynx.

In advocating this approach, it is realized that many laryngologists are unalterably opposed to any form of peroral intralaryngeal operation in carcinoma of the larynx, but Figi, in a recent publication states that, "after cautiously using it and observing results during the course of a number of years, it can be heartily endorsed for use in a carefully selected group of cases." We wish to emphasize the last part of the quotation, "a careful selected group of cases." If this is not rigidly adhered to, the operation is doomed to failure.

Suspension laryngoscopy is the only method of direct laryngoscopy which, besides providing satisfactory visualization, makes it possible to use both hands in intralaryngeal manipulations; and bimanual

operation must be employed for the successful extirpation of malignant lesions of the vocal cords.

When the larynx has been exposed, the tumor is grasped with a laryngeal fixation forceps and traction is made toward the median line. Traction toward the median line has a double purpose. It produces tension on the cord, making the incisions easier; and more important it provides a maximum view of the lateral extent of the cord which is necessary if a wide margin of normal tissue is to be removed together with the neoplasm. The amount of tissue to be removed having been decided upon, a sharp laryngeal knife is employed for the excision. This is immediately followed by electrocoagulation which, besides providing insurance against recurrence as has been previously mentioned, helps to control hemorrhage. If undue trauma has been avoided, the postoperative reaction should be negligible.

Formerly it was necessary to use chloroform anesthesia if electrocoagulation was to be employed. This was one of the objections to this method of operation. Since the development of pentothal-sodium, this objection has been removed. Pentothal-sodium is reasonably safe and produces sufficient relaxation for the proper performance of suspension laryngoscopy.

While suspension laryngoscopy is a comparatively simple procedure in most cases, it must not be supposed that it can be accomplished with ease at all times. An "Andy Gump" chin or a short, stout neck certainly increases the difficulties and in some cases it is impossible to expose the anterior commissure because of some anatomic peculiarity. Should these circumstances offer sufficient obstacles to a completely adequate exposure of the lesion, laryngofissure should be performed. Twenty-six patients have been operated upon by this method with excellent results.

INTRALARYNGEAL DISSECTION (6 cases)

14 patients living and well in from 5 to 13 years

9 patients living and well in from 1 to 5 years

1 patient lived 3 years, recurrence, death

1 patient lived 6 years, pneumonia, death

1 patient lived 11 years, recurrence, death

Until a few years ago we adhered strictly to two methods of managing laryngeal carcinomas, the conservative and the radical methods. There was no middle ground between these extremes. The conservative method referred to intralaryngeal dissection under suspension laryngoscopy; while the radical method meant complete laryngectomy. In time it was realized more and more that there was a very definite place for an operative procedure that would fill this great gap existing between conservative and the radical operations. The answer to this was laryngofissure and its value is unsurpassed in those patients in whom the lesion is too extensive for intralaryngeal dissection and yet not quite extensive enough for laryngectomy. The results obtained are excellent and the voice good as a rule and as time goes on we are more and more enthusiastic about this procedure. In the second group, then, we include those cases of early cancer of the vocal cord which are either too far advanced or too unsatisfactorily located for operation by intralaryngeal dissection and yet offer reasonable hope of cure without the necessity of total extirpation of the larynx.

The ideal case is one in which the lesion involves the middle portion of the vocal cord with both ends uninvolved. The operation of laryngofissure which, of course, consists of splitting the thyroid in the midline, thereby exposing its interior, is a brilliant technical conception, relatively simple to perform. As time will not permit a discussion of the steps in the procedure, only a few statements on some points of interest will be offered. We have in general adopted the standard type of operation, preferring not to resort to tracheotomy or to excision of the thyroid ala. The operation is satisfactorily done under local anesthesia. An electric saw used too vigorously in cutting through an ossified thyroid may produce sufficient heat to destroy bone, resulting in sequestration. The thyroid cartilage in women may as a rule be divided in the median line by means of a knife. We

have made it a routine procedure to use coagulation following the removal of the vocal cord. This, as a rule, controls post-operative bleeding. Some patients have developed granulation tissue which occasionally taxes our diagnostic ability as this tissue closely resembles a recurrence of the original lesion. Frequently it is necessary to remove this granulation tissue to provide adequate breathing space and to check up microscopically on the tissue removed. To date only 20 persons have been operated upon by this method. They have been carefully selected and the results obtained have been entirely satisfactory. It has been necessary to reoperate on three patients who had definite recurrences. Two of these patients responded to coagulation under suspension. The first is still well after four years; the second shows no evidence of further recurrence after one year. The other patient reoperated upon has again developed a recurrence and will probably require a laryngectomy. One patient developed perichondritis following radiation. Three patients developed excessive scar tissue in the larynx, producing signs of dyspnea. All three of these patients have required much attention because of dyspnea.

Into the third group are placed those cases which, although considered too extensive for laryngofissure, are yet confined within the cartilaginous structures of the larynx. To the latter portion of this stipulation may be extended some latitude. Tumors that have extended slightly beyond the borders of the cartilaginous structures or those exhibiting very early metastasis to the regional nodes may still be included in this division and operation by laryngectomy advised.

Lagging of the involved cord and certainly fixation of the cord are indications that the lesion is too far advanced for successful laryngofissure. Involvement of an entire cord or invasion across the anterior commissure with considerable involvement of both cords is likewise a contraindication to laryngofissure.

Formerly ether or chloroform was thought to be the only satisfactory anesthetic.

tic for laryngectomy. While general anesthesia is still extensively employed for the operation, we have, for the past six years, used only local infiltration with novocaine and are convinced of its superiority. We feel that reasonably heavy preoperative sedation, in spite of arguments against it, is safe and it certainly adds to the ease with which the patient can be made to cooperate. During this six year interval it has been necessary to resort to a general anesthetic only once. This was in the case of a robust individual who, contrary to expectation, was made wildly excited by the preoperative sedative.

The old T incision has been discarded in favor of a simple midline division extending from just above the hyoid bone to the suprasternal notch. By making traction first on one side and then on the other, ample room has been furnished to carry out all of the necessary procedures. With the midline incision, closure is more easily accomplished and healing is far more rapid and uncomplicated.

The larynx is skeletonized by separately dividing the muscles at their attachment. The sub-perichondrial elevation as recommended by Crowe has been employed on several occasions but in our experience it has not facilitated skeletonization. Next, the trachea is severed. If possible this is done just below the cricoid cartilage. In cutting through the trachea a small tongue-shaped flap is dissected from the posterior tracheal wall. This is thought to be a very important step, for its proper utilization not only minimizes the possibility of drainage into the tracheobronchial tree, but it also produces a more generous mucosal area available for the formation of the tracheostomy.

As soon as the trachea is severed, it is lifted above the field to prevent the entrance of blood and a large rubber tube of approximately its same diameter is inserted into the lumen. Here the tube is firmly fixed by two or three large safety pins. The pins, held by heavy forceps are passed through and through to include both the trachea and the tube. This has a twofold

purpose. It closes the trachea to the entrance of blood and it provides a means of traction upon the trachea which lifts it away from the larynx and elevates it from the level of any puddling of blood which could seep through an imperfect corking by the tube. Once this is accomplished, the opposite end of the tube is allowed to pass down the side of the table toward the head, where, away from the scene of action and acting as an airway, it can be observed by the nurse who is seated at the head of the table.

The larynx is dissected from below upward and when it is finally extirpated, every effort should be made to preserve as much of the pharyngeal mucosa as possible. A piece of merthiolated gauze is now packed through the defect into the pharynx which has been previously slightly anesthetized and it is allowed to remain in place during most of the pharyngeal closure. When this is almost complete, the pack is removed through the mouth and the feeding tube is inserted, following which the remaining defect in the pharyngeal wall is closed. Meticulous attention to this phase of the operation, we think, has materially lessened the incidence of fistula and secondary infection. At various times we have experimented with different suture materials, including black silk and cotton for closure of the pharynx but we have come to the conclusion that 0000 chromic gut on atraumatic needles is superior to any other material. A layer of muscle is brought over the suture line and adequate drainage is obtained by making bilateral stab wounds slightly above the upper border of the trachea and about two inches laterally. Rubber dam is introduced through the stab wounds and placed appropriately within the operative field. These drains are left in place for five or six days.

At this stage, after all bleeding points have been secured, a generous amount of sulfathiazole powder is sprinkled into the wound. This applies only to the last six cases, as prior to the time we saw them the drug was not in general use. We feel that

healing has been more rapid and drainage lessened in these cases.

We have borrowed a procedure from the general surgeon which has been of considerable assistance. After applying a layer of gauze over the wound, a large sea sponge is placed over it and this is bandaged tightly, thereby obliterating any dead spaces by maintaining constant pressure. This type of pressure bandage is continued for about three days.

By adhering to the above principles we have had a high incidence of primary healing and the few esophageal fistulas have not been very troublesome.

Until the wound is completely healed, no attempt is made to encourage the development of a buccal voice. Some patients have developed excellent voices, one appearing on Ripley's program. Those who have not been successful in acquiring a pseudovoice have been urged to use an artificial larynx and some of these have developed speech with uncanny ability. Only one case has been regrettable. A successful merchant from a small town was advised to use pad and pencil after his laryngectomy but to our consternation we were informed that he could neither read nor write—this despite his success in business! He has learned to whisper after a fashion and remains well from an operative point of view; but he is morose and is a cause of grief in his family.

Our observation is that the laryngectomized patients accept the problem of rehabilitation in a calm and determined manner, and in spite of their handicap they are a happy lot, thankful to be alive and anxious to do their bit in the world of today.

LARYNGECTOMIES (48 cases)

- 11 patients living and well from 5-10 years
- 23 patients living and well from 1-5 years
- 6 patients dead within 2 years after operation
- 2 patients dead within 2 years after operation
- 6 patients not answering questionnaire

Into the fourth group are placed those patients whose condition is too extensive for operation, the so-called extrinsic type of carcinoma. Unfortunately too many such persons are seen for the first time by the laryngologist and usually little can be of-

fered these patients. Radiation may prolong life but often enough the complications of radiation therapy only add to the misery already present; as far as cure is concerned, the hope is too forlorn to offer much in that direction. But let this not be considered an indictment of radiation therapy in carcinoma of the larynx in general. While we are convinced that operation offers the greatest number of permanent cures in properly selected cases, the advocates of radiotherapy are providing sufficient evidence of success in similar circumstances to give their contentions careful consideration.

It is certain that if the general practitioner could more fully realize that life and death in carcinoma of the larynx depends upon an early diagnosis, a more conscientious effort would be made to arrange laryngologic consultations for all persons suffering from hoarseness. It has always been an ordeal to inform the family and in occasional instances, the patient himself, that a growth is too extensive for surgical removal. Each of you who has been through this knows the numerous questions with which the laryngologist is besieged and it usually ends with the statement that if only the dangers and potentialities of persistent hoarseness had been known, a physician would certainly have been consulted much sooner.

CONCLUSION

Again, therefore, though the repetition be wearisome, let it be well remembered that persistent hoarseness is the one and only unfailing indication of early carcinoma of the larynx.

DISCUSSION

Dr. Mercer G. Lynch (New Orleans): The classification of carcinoma of the larynx into four groups has made the selection of the type of operation and treatment clear-cut and definite.

I would like to reemphasize the symptom of hoarseness in these cases. As clear-cut as abdominal swelling in pregnancy, projectile vomiting of brain abscess, loss of function of a limb following fracture; so, persistent hoarseness of six weeks may be taken to mean serious laryngeal disease until proved otherwise. If this is adhered to and if direct examination is insisted upon in all doubtful cases, there will be a good many false findings, benign or infectious growths encountered,

but those early cases will be diagnosed and receive attention during the stage when the most good with the least amount of operation and loss of time where the prognosis is optimism rather than pessimism. This is naturally a severe statement to make of all cases of persistent hoarseness but when one stops to think that 40 per cent of those patients seen are past the stage of laryngectomy, then I think such a procedure is justified.

The thought that 40 per cent of cases of carcinoma of the larynx that are seen are past the stage of laryngectomy is appalling. What is to be done with these patients—x-ray and tracheotomy and watchful waiting? The end of these patients is not pleasant. These are the so-called inoperable cases, and anything within reason that offers a possibility is to be accepted.

In these cases tracheotomy followed by laryngectomy, (opening the larynx by means of laryngofissure) followed by the implantation of radium, using large doses and supplemented with deep therapy to the glands of the neck, offers one means of helping these individuals. The procedure is drastic, there is a certain amount of sloughing which may be extensive, often radia-

tion burns of the skin occur, but again this is accepted if the end results are justified.

The mortality rate is high as is to be expected in advanced cases of carcinoma, but in a series of 14 cases there have been 35 per cent who have lived beyond the year. Time will tell if all these are to have a five year cure. Nine died postoperatively or within the year from recurrence and metastasis. These are the cases of inoperable carcinoma where nothing much has been done in the past.

Again examine your hoarse patient with care that this figure of 40 per cent may be reduced.

Dr. Philip Bayon (In closing): We wish to emphasize the tremendous importance of careful and complete laryngoscopic examination in all hoarse patients, especially when they are in the cancer age.

Many patients, of course, will require only vocal rest or the simple removal of a benign tumor but some will undoubtedly be found who are suffering from malignant disease; and let it be remembered that early cancer of the larynx has a very good prognosis: advanced cancer, a hopeless outlook.

A CLINICO-PATHOLOGICAL STUDY OF DIABETES MELLITUS IN THE SOUTH

HUGO. T. ENGELHARDT, M. D.*

AND

FRANCIS E. BRUNO, M. D.*

NEW ORLEANS

We have been interested in inquiring into the clinico-pathological findings of individuals dying either from diabetes mellitus itself, or complications thereof, especially in the light of more adequate forms of therapy that are at the command of the modern physician.

Material for this survey was obtained from the protocols of individuals dying of diabetes mellitus at Charity Hospital from the years 1928 through 1941. During this period 101 diabetic patients came to autopsy. Fifty-one per cent of these were negroes, 38 being females and 13 males. This ratio of male to female was almost the same for the white race, there being 34 females and 16 males. The point to be

emphasized, as revealed by the National Health figures,¹ is the marked predominance of diabetes in the female.

From July 1937 through June 1941, a total of 240,375 patients were admitted to Charity Hospital. Of this figure, 126,923 were white and 113,452 were colored. In this interval a total of 2067 diabetics were admitted; of these 1,245 were white and 822 were colored. These figures indicate that almost one-half again the number of white diabetics were admitted as colored which is out of proportion to the general hospital admissions. There were 209 diabetic deaths during this interval, of which 109 were white and 100 colored. These facts reveal that although the morbidity of diabetes in colored patients is less than that in whites, the disease and its complications are relatively more fatal in the negro.

CHART I

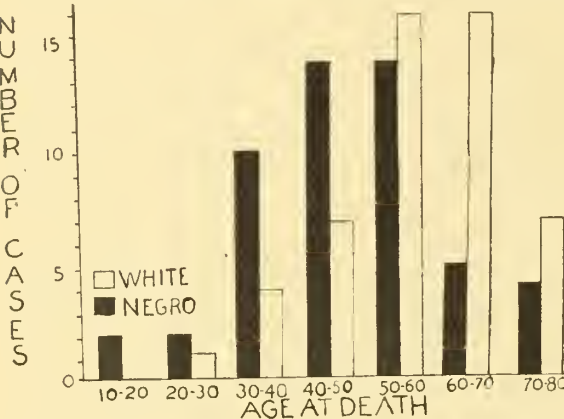
Admissions	Combined	White	Colored
July 1937-41.....	240,375	126,928	113,452
Diabetic admissions	2,067	1,245	822
Deaths due to diabetes July 1937-41	209	109	100

*These figures were obtained from Charity Hospital.

The average age of the entire autopsy series was 54.8 years, and when broken

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down as to race, revealed 49.8 years for the colored and 56.8 for the white. Dry and Tessmer² found the average age in Minnesota to be 59.5, which is more in agreement with the figures of the Metropolitan Life Insurance Co., which was 60.2 years in 1939. The apparent discrepancy in our figures may be explained by the fact that our series includes patients dying from 1928 to date. One definite point is that the average age of the negro dying of diabetes was six years less than the white. These results corroborate the findings of the Metropolitan Life Insurance Company.



It will be noted in Figure I that a greater per cent of the colored patients died before the fourth decade, while the majority of the white patients died after the fifth. Undoubtedly the intelligence and economic factors can explain the greater longevity of the white diabetics. It has been our experience in the diabetic clinics that colored patients are more apt to misunderstand the necessity for prolonged treatment and observance of diet.

COMA

Twenty-nine of the autopsy cases were in varying degrees of coma on admission or at sometime during their hospital stay. This figure is intermediary between the coma incidence of Wilder's 41 per cent and the 12 per cent reported by Dry and Tessmer. This inconsistency is due to the fact that a large number of the cases of the former series were in the pre-insulin era. The high incidence of cutaneous, urinary tract, and pulmonary infections certainly

must have had a definite part in the development of coma in this series.¹⁰

GANGRENE AND CUTANEOUS INFECTION

Contrary to our clinical impression of cases in this category, there was an almost equal distribution between the negroes and whites. Lemann³ in an analysis of 1111 diabetics in Charity Hospital admissions reported 124 cases of gangrene, an incidence of 11 per cent, in the interval 1921 through 1926. In his series 14 per cent of the whites and 21 per cent of the negroes had gangrene; he attributed this preponderance in the negro to poor hygiene in general and neglect of the feet in particular.

CHART II

		Subcutaneous abscesses of		
Gangrene:		hands and feet	2	
	Foot	16	Paronychia (Tularemia)	1
	Toes	3	Abscess of coccyx	1
			Inguinal adenitis	1
Carbuncles	12	Cellulitis of scalp	1	
		Amputation of hands and		
		forearms for sepsis	3	

RESPIRATORY

It is worth emphasizing the frequency of suppurative pulmonary lesions listed below. Wilder¹ states that pulmonary abscess and gangrene have not been encountered among the cases of diabetes coming to his attention. We believe that the relatively high incidence in this series may be explained in two ways. First, that evidence of multiple suppurative lesions in many cases was due to a septicemia and secondly, that the high percentage of coma could have easily predisposed to aspiration of infected material.

Among the seven cases of pulmonary tuberculosis, only one was found to be active, these figures are essentially the same as those obtained by Himsworth⁵ who found 15 tuberculous lesions in 230 consecutive cases.

CHART III

Pneumonia Lobar	6	Abscesses of lung	
Friedlander Pneumonia	1	Multiple	8
Bronchopneumonia	23	Solitary	5
Pulmonary edema	12	Tuberculosis	
Emphysema	1	Pulmonary	6
Atelectasis	2	Tracheobronchial	
Gangrene right upper lobe	1	lymph nodes	1
		Infarction	1
		Suppurative	

Pleurisy with effusion	Tracheitis	1
Bilateral	4	
Unilateral	2	

CARDIOVASCULAR

The striking feature here is the relatively low incidence of arteriosclerosis in general and coronary sclerosis in particular. These figures are considerably less than reported by other writers.^{2,3} There is work to show that season plays a highly significant role in the sclerotic complications of diabetes.⁷⁻⁸ It is conceivable that the sub-tropical climate of southern Louisiana may modify the manifestations of arteriosclerosis.

This discrepancy can perhaps be further explained by the large proportion of negroes in our series. Coronary sclerosis was a relatively uncommon diagnosis on the protocols of the colored patients. Burch and Voorhies⁶ in studying medical case histories at the Charity Hospital found a lower incidence of coronary occlusion in negroes, compared with whites; the incidence being 7 to 2.

Coronary occlusion occurred in males and females in a ratio which was almost 1:1, in this series. This is in agreement with the findings of Root et al who reported a higher incidence but a similar ratio. It has been observed in non-diabetics under the age of sixty, that occlusion is much less frequent in females.

CHART IV

Arteriosclerosis	52	Toxic myocarditis	1
Coronary sclerosis	24	Parenchymatous degeneration	1
Fatty heart	3	Coronary infarction	
Multiple abscess of heart	1	Old	11
Adhesive pericarditis	1	Fresh	2
Syphilitic carditis	1	Thrombosis left iliac vein	2
Atheromatosis of aorta	2	Thrombophlebitis left leg	1
Interstitial myocarditis	1	Thrombophlebitis portal vein	1

GASTROINTESTINAL TRACT

In spite of the fact that the preponderance of our patients were females in the middle age group, we found a surprisingly low incidence of gallbladder involvement. Here again, race may play a part. In 326

proved cases of gallbladder disease from the same hospital, with the same proportion of admissions, we found that only 16.5 per cent of the total were negroes.

CHART V

Carcinoma of stomach	1	Cholecystitis with stones	3
Chronic gastritis	1	Chronic passive congestion of liver and spleen	3
Gangrenous appendicitis with general peritonitis	1	Ascites	1
Intestinal obstruction	1		
Cholecystitis	1		

URINARY TRACT

Ophüls⁹ stated that four per cent of all patients coming to necropsy have an infection of the upper urinary tract. It has been shown that from 18 to 22 per cent of people dying of diabetes mellitus have infection of the upper urinary tract.¹⁰ Our findings would tend to corroborate the fact that diabetics are very susceptible to urinary infections. The five cases of cortical abscesses emphasize the role that septicemia plays in diabetes. Moreover, it has been appreciated that the frequency and severity¹⁰⁻¹² of genitourinary infections may predispose to the development of coma.

CHART VI

Renal abscess		Renal infarction	1
Single	3	Pyelonephritis	9
Multiple	2	Glomerular nephritis	7
Bilateral hydro-nephrosis	2	Nephrosclerosis	22
Fatty degeneration of the kidneys	1	Acute cystitis	4
Horseshoe kidney	1		

The anatomic diagnoses, as they appeared on the autopsy protocols of the remaining systems, are tabulated below. It may be of interest to note the rather surprising fact that in the series of 101 cases, malignancy was found in only one instance.

Marble¹³ states that there is evidence to indicate that cancer is more common in diabetics, admitting however that there are serious objections to this conclusion. The relatively lower average age of our series may mean that a sufficiently large number did not live long enough to develop cancer.

CHART VII

Endocrines		Central Nervous System	
Bilateral cortical edema of adrenal	1	Cerebral petechiae	1
Increased lipoid content of adrenal	1	Cyst of right basal ganglia	1
Decreased lipoid content of adrenal	1	Multiple cerebral infarcts	1
Adenomas of thyroid	1	Cerebral edema	5
Chromophobe adenoma of pituitary	1	Cerebral arteriosclerosis	1
		Left cerebral infarct	1
		Diffuse suppurative meningitis	2
Miscellaneous		Genital Tract	
Toxic hepatitis	3	Uterine fibroids	3
Fatty degeneration of liver	11	Endometrial polyp	2
Central necrosis of liver	1	Salpingitis	2
Pancreas		Hypoplastic endometritis	1
Acute	1	Hypertrophy of prostate	2
Subacute	1	Prostatic abscess	1
Chronic	3	Pyometria	1
Atrophy	6		
Fibrosis	1		
Hydropic degeneration	1		
Lipomatosis	4		
Estivo-autumnal			
Malaria	1		

SUMMARY AND CONCLUSIONS

The postmortem findings of 101 consecutive diabetic autopsies from the Charity Hospital of Louisiana are analyzed. This represents the number of diabetics coming

to postmortem from 1928 to 1941. Of this total, negroes comprised 51 per cent. The average age of the colored diabetic at death was six years less than that of the white. An analysis of the general admissions and the diabetic deaths would indicate that for the negro, diabetes has a lower morbidity and a higher mortality rate.

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NEW ORLEANS

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SOME COMMENTS ON CURRENT CONDITIONS

The war moves apace. Our medical friends and colleagues have left or are leaving in large numbers to join the armed forces. The South, in proportion to the number of physicians who live there, has contributed many more men to the army and navy than any other sections of the country. Many of our cities, towns, and rural districts are suffering seriously from lack of physicians. The doctors who are remaining behind are working as they have

never worked before. As an example, in one relatively small community with about fifty doctors, nearly half of these men have left to go into the services. One physician in this particular town, who has not delivered a baby for some five years, now has 150 maternity cases on his delivery list.

To the nurses who are in hospitals or engaged in private nursing, the National Nursing Council for War Services recommends that practically every nurse under forty, unless a supervisor or instructor in a nursing school, should serve in the Army or Navy Nurse Corps. The number of nurses and doctors who will be needed in the future is problematical. At the present time it seems to be that there will be a still further depletion of medical men and the trained auxiliaries to medical practice as the army grows larger. Incidentally, there has been considerable criticism among members of the medical profession relative to a continuation of the eight hour private duty restrictions. It is felt that in this time of emergency that the nurses could and should waive for the time being this more or less artificial limitation of active duty. Just at the present time there is a shortage of nurses, and there will be a still further shortage. Doctors are working over time in their practice as a contribution to present war conditions. They can not understand why the nurses are not likewise willing to make sacrifices. It does seem at the present day that every one is out to get all that he can for as little as he can put out. Unfortunately, we are seeing this happen right along in many of the war industries. If the war is lost it will not be eight hours a day, forty hours a week, it will be something drastically different.

Events change from hour to hour and from day to day in so far as the great training school for doctors in the South, the Charity Hospital, is concerned. After partial closure, Charity Hospital has re-opened for the month of August, and at the time of writing of these notes the probabilities seem to be that moneys will be found to continue the services of this great institu-

tion for the poor and needy, to carry on the instruction of large numbers of medical students needed for the national emergency, the training of nurses and nurses' aides, and especially the training of the men on the intern and resident staff, which men are scheduled in most instances to enter the army in a very short period of time. Illustrative of the general interest in this problem, and the special interest of the physician, are the three resolutions printed in the Louisiana news section of the Journal.

NATIONAL PHYSICIANS COMMITTEE

The National Physicians Committee has last week sent out a special bulletin to many of the physicians in the State. One of the plans suggested by this excellent, non-political, non-profit organization is to have the physicians interview the candidates for the House of Congress relative to their stand on such important questions as compulsory sickness or health insurance, and the status and rights of the profession.

The N. P. C. comments justifiably that now is the time to establish a sound legal foundation for organized medicine physicians. It is needless to point out that sooner or later, possibly sooner rather than later, compulsory sickness or health insurance, the first steps to socialized medicine, will be given birth in the halls of Congress. Now is the time to line up our State Congressmen to fight any such pernicious change in medical practice. It is repugnant to think that legislation will be introduced which will authorize the providing of medical care, supervised by laymen or by others than proper qualified medical men. Undoubtedly this is going to happen. We urge earnestly that those doctors who have received the bulletin of the N. P. C. follow out these suggestions. We earnestly urge that medical men acquaint the candidates for Congress of their feelings concerning the harm that may arise as a result of socialized medicine.

THE STANDARD NOMENCLATURE OF DISEASE AND OPERATIONS

The American Medical Association recently has issued a completely revised edition of this volume originally published in 1932. This present edition contains not only the standard nomenclature of diseases, but there has been added also the standard nomenclature of operations.

This book is a publication containing nomenclature common to every day medical terminology. A standard nomenclature should be used by writers regularly and should be employed at all times by hospitals and institutions which have to compile statistics and statistical data. Every hospital and every man interested in the scientific and uniform classification of disease and operations should make use of this relatively small volume prepared by a group of men who are in every way qualified for the undertaking.

NEUROCIRCULATORY ASTHENIA

The American Heart Association has issued a bulletin written by Paul D. White of Boston, which is particularly appropriate at the present time. The bulletin has to do with neurocirculatory asthenia, a condition recognized by DaCosta during the War Between the States, labeled by him the irritable heart and which was often designated in the last great World War as the effort syndrome and finally has come to be called neurocirculatory asthenia, frequently abbreviated N. C. A.

While this condition is by no means unusual in civilian life, nevertheless it is very much more frequent under the strain of war conditions. It develops not only in the soldier who is in active combat, but many a young man has broken down physically and psychically as a result of changing to an environment to which he is unaccustomed, and which in some unknown way definitely affects the nervous, the circulatory, and the muscular systems of the body. Nothing is definitely known concerning the mechanism of production of the condition. It is known, however, that it occurs most

often in young adults, preponderantly in males, who have a family history of nervous and physical disorders. All races may have neurocirculatory asthenia, but the more highly sensitive nervous Anglo-Saxon race is more prone to it apparently than are the more phlegmatic people.

The factors that precipitate neurocirculatory asthenia are many and varied. Infections, physical exhaustion, nervous prostration, and anxiety alone or in various combinations according to White may be associated with or accompanied by neurocirculatory asthenia. The condition is often labeled neurasthenia, or an anxiety neurosis, because of the commonly associated fear of heart disease.

The characteristic symptoms are indicated by the name of the condition. Nervous expressions are common, and they may be protean, and variegated from expressions as headache and diarrhea, to insomnia, and to what not. Circulatory symptoms are often outstanding. They may be subjective and to a lesser extent objective. Sensations the patients feel and complain of notably are dyspnea and palpitation. Often the patient has precordial pain usually in the left breast region, more persistent than the pain of angina pectoris and not as likely to radiate to the arms. The asthenia may be simply the feeling of tire and a fatigue after relatively slight physical effort, or it may be so pronounced that the patient actually does not have the strength to raise the fork and spoon to his mouth. This asthenia may come on with an abruptness which is outstanding. Soldiers have been observed who have gone into combat with heavy packs and rifles and who have had to be evacuated because actually they could not lift their guns to the shoulder nor could they walk.

The objective findings are by no means characteristic but often most suggestive. There is almost invariably tachycardia and a poor response to the exercise test. Occasionally there may be a functional murmur, but there is no enlargement of the heart and no organic murmur. These patients have cold moist hands; axillary perspiration is pronounced during the examination, even in a cold room perspiration may be running down from the axilla in streams; blood pressure may be elevated or unaffected. White does not mention the fact that often there is an absence of the corneal reflex and of the gag reflex, whereas the tendon reflexes are frequently exaggerated.

Unfortunately there is not much that can be done for these patients who are born with this physical inadequacy, in which the patients must learn to live within themselves and must adjust their lives, recognizing that their condition is a handicap but is not a serious disability. Much can be done with the soldier who has developed the syndrome acutely, physical re-education, mental readjustment, and freedom from the strain that has produced the syndrome. In other words, these soldiers who develop the syndrome can never and will never be combat troops. They will have to work in the service of supply and in the rear and take the best of care of themselves, leading a regular life, taking a certain amount of mild exercise, and avoiding the over use of tobacco, liquor, or caffeine preparations. There is no specific drug which will be of any value. It is needless to state that sedatives will often help to tide over the acute phases of the effort syndrome.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

SEPTEMBER CALENDAR OF MEETINGS

Tuesday, Sept. 1—Eye, Ear, Nose and Throat Staff, 8 p. m.

Every Wednesday—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.

Every Thursday—Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
Baptist Hospital, Executive Meeting, 8 p. m.

Monday, Sept. 14—Meeting of the Board of the Society, 8 p. m., Hutchinson Memorial.

Dr. Charles A. Bahn was recently elected deputy governor of the Toastmasters' Club of New Orleans.

Dr. Edward B. Faget was recently appointed as a member of the city health department's clinic staff.

Dr. Roy B. Harrison was appointed to membership on the National Board of Medical Examiners, for a four year term, at a recent meeting of this Board.

Drs. H. W. Kostmayer, Alton Ochsner and W. A. Sodeman recently spent two weeks in Venezuela studying hospitals of the Standard Oil Company, Venezuelan medical schools and pre-medical courses.

Dr. Chester A. Stewart was the principal speaker at the Olmsted ceremonies recently held in Rochester.

Dr. Frederick F. Boyce presented a paper on The Principles of the Treatment of Burns, with a Special Note on the Liver-Kidney Factor at the summer meeting of the Jefferson County Medical Society at St. Mary's Hospital in Port Arthur on July 13.

Drs. Edgar Hull, James D. Rives, J. H. Musser and Alton Ochsner recently attended a three-day course in the medical aspects of chemical warfare at the University of Cincinnati.

During the month of July thirty-one members were placed on the military rolls. They are as follows: J. J. Archinard, P. J. Bayon, Oscar Blitz, W. M. Boles, Irvin Cahen, L. S. Charbonnet, Jr., Stanley Cohen, Conrad G. Collins, Samuel H. Colvin, Jr., Peter Everett, I. M. Gage, Jack S. George, Paul L. Getzoff, Geo. M. Haik, John S. Herring, H. Reichard Kahle, M. H. Kaplan, C. Barrett Kennedy, Sam Levi, Mercer G. Lynch, Edward D. Matthews, C. J. Miangolarra, W. D. Norman, Chas. B. Odom, George F. Schroeder, Marvin C. Smith, Cosmo J. Tardo, E. Perry Thomas, G. C. Tomskey, E. Garland Walls, and R. M. Willoughby.

During the month of July the following physicians were elected to membership:

Active Membership

John F. Daniel, Maxwell F. Kepl and Donald B. Williams.

Associate Membership

Ira L. Schamberg.

The membership of the Society, as of July 31, 1942, is 652, of whom 513 are active members.

NEW ORLEANS GYNECOLOGICAL AND OBSTETRICAL SOCIETY

At a recent meeting of the New Orleans Gynecological and Obstetrical Society the following physicians were elected to office for the coming year:

Dr. J. W. Reddoch, president; Dr. Earl Conway Smith, first vice-president; Dr. Eugene H. Countiss, second vice-president; Dr. Edwin L. Zander, secretary; Dr. H. B. Alsobrook, treasurer; and Dr. Lucien A. LeDoux, additional member of the board.

NATIONAL PHYSICIANS COMMITTEE

The National Physicians Committee is fighting our battle for the preservation of medical service in the United States. At the recent annual meeting of the American Medical Association, held in Atlantic City, they approved unreservedly the work of the National Physicians Committee.

The Orleans Parish Medical Society approved a plan to make a financial contribution to the National Physicians Committee at this time. Therefore, the following have been appointed as representatives of each hospital in New Orleans to act as local agents for making a complete canvass of the doctors in the city:

Dr. Joseph W. Reddoch, Baptist Hospital; Dr. Leon Menville, Charity Hospital; Dr. Wm. B. Clark, Eye, Ear, Nose and Throat Hospital; Dr. A. V. Friedrichs, French Hospital; Dr. Daniel J. Murphy, Hotel Dieu; Dr. Edwin L. Zander, Mercy Hospital; Dr. S. M. Copland, Touro Infirmary; Dr. Clyde Brooks, L. S. U. Medical School; and Dr. John Musser, Tulane Medical School.

The work of the National Physicians Committee is of the greatest value and importance to all physicians at this critical time. They are doing heroic and effective work, looking far into the future, guarding against the deterioration of medical practice in the United States. The Committee is in great need of additional funds in order to carry on, in a thoroughly successful manner, the work which it has planned.

When your local representative calls on you please give him a statement of the amount you have already contributed to the National Physicians Committee, together with whatever contribution you can make within the next thirty days.

Clyde Brooke, M. D., Chairman,
Committee of the Orleans Parish Medical Society
on the National Physicians Committee.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

REPORT OF COMMITTEES ON NUTRITION

First, let us review briefly some of the developments leading to the compilation of this list of foods recommended for emphasis in the diet of the people of Louisiana.

As a civilian defense measure the Federal Government has undertaken to improve the well-being of the population of this country by dietetic instruction looking to a better food intake.

Following a national conference in Washington, various State and City Nutrition Committees were formed. After several preliminary steps, a Committee of the Orleans Parish Medical Society and later of the State Medical Society was appointed. The State Committee was selected in conformity with the following action of the House of Delegates at the last meeting of the Society:

1. That the Chairman of the House of Delegates of the Louisiana State Medical Society appoint a committee to collaborate with the Committee of the Orleans Parish Medical Society and with other agencies concerned with better diet programs in the schools and in welfare work, so that there will be uniformity in the recommendations submitted to the public by physicians, teachers, welfare workers and others concerned, and that these recommendations may come with the added force that they have met the approval of the physicians of this state.

2. That arrangements be made that these lists be available to all physicians at a moderate price, and that physicians be permitted to have them printed bearing their own names and that every physician in the state be urged to get one of these lists into the hands of every one looking to him for health, and that the importance of verbal explanations and instructions be emphasized.

Physicians are urged to have these lists printed, multigraphed or mimeographed, carrying their own names, or they may be secured (without their names) in any quantity desired from the Tulane University Press, Gibson Hall, New Orleans, at the following prices:

100	\$0.75
500	\$1.50
1,000	\$2.25

LIST OF SOME HEALTH FOODS

MILK, cream, butter, buttermilk, cream cheese, cheese.

BREAD and CEREALS—Whole wheat bread, rye bread, vitamin enriched bread. Whole wheat cereals, wheat germ cereals, oatmeal, unpolished rice. Corn products (especially the yellow)—as meal and grits—when locally grown and freshly ground are good. Rice polishings and wheat germ cereals, when available, are excellent.

FRUITS (fresh)—Lemons, oranges, grapefruit, apples, apricots, figs, peaches, grapes, strawberries, fully ripe bananas, pineapple, watermelon, cantaloupe, avocado.

FRUITS (dried)—Apples, apricots, peaches, prunes.

VEGETABLES (raw)—Green lettuce, cabbage, parsley, water cress, tomatoes, tomato juice, carrots, green pepper.

VEGETABLES (cooked)—Carrots, pumpkins, yams, yellow squash, tomatoes, yellow corn, fresh or dried beans and peas (including soy beans), broccoli, brussels sprouts, cauliflower, spinach, all greens (mustard, turnips, collards, etc.), okra.

PROTEINS—Liver, beef, veal, mutton, lean pork, poultry, fish, sea foods, eggs.

DRESSINGS—Cream dressings and those made with salad oil, lemon juice, egg, etc.

NUTS—Pecans, peanuts, peanut butter.

GENERAL—Most fresh fruits, fresh vegetables, whole grain products, dairy products, fresh lean meats (including poultry and fish).

Committee of the Louisiana State Medical Society:

O. W. Bethea, Chairman,
H. E. Bernadas,
C. G. Cole,
M. D. Hargrove,
John Snelling,
Rhett McMahon,
C. A. Martin,
W. F. Couvillion.

Committee of the Orleans Parish
Medical Society:

Oscar Bethea, Chairman,
Edgar Hull,
Chaille Jamison,
Randolph Lyons,
Daniel Silverman.

SOUTHERN MEDICAL MEETING

The usual plans are being made for the holding of the annual meeting of the Southern Medical Association to be held this year in Richmond, Virginia, November 10-12.

It will be noted that this year owing to the war the activities will occupy three days instead of the usual four days, but all of the program which has made this meeting so attractive will be carried out as heretofore.

Hotel reservations should be made through the Hotel Committee, Southern Medical Association, 109 North Fifth St., Richmond, Virginia.

C. H. WEBB TO SERVE AS ROTARY INTERNATIONAL OFFICER

Dr. Clarence H. Webb, a pediatrician and co-founder of the Children's Clinic in Shreveport, La., and a member of the Louisiana State Medical Society, took office in July as district governor of Rotary International, the world-wide organization which has more than 5,000 clubs with 210,000 members devoted to service to their communities and their countries. Dr. Webb is a past president of the Louisiana State Pediatric Society and of the Caddo Council of Social Agencies.

Unanimously elected at Rotary's recent convention in Toronto, Canada, by delegates representing Rotary clubs in more than 50 countries of the world, Dr. Webb will devote much of his time during his year in office to visiting the 46 Rotary clubs in Louisiana and Mississippi, which comprise the 139th district of Rotary International, and advising officers and committeemen on the activities of their clubs. He will serve as district governor until shortly after Rotary's 1943 convention in Philadelphia, Pa., in June.

PANAMA LECTURES

Dr. George E. Burch, Department of Medicine, Tulane, conducted a postgraduate course in internal medicine and cardiovascular diseases at the invitation of the Government of Panama the first part of August. The courses were given to the doctors of Panama at the Santo Tomas Hospital in Panama City. The program consisted of ward rounds, consultations, an introductory course in cardiography, and evening lectures which were given in the Gorgas Memorial Institute and were attended by the Panamanian physicians and the American doctors stationed in the Canal Zone.

AMERICAN COLLEGE OF CHEST
PHYSICIANS

We are pleased to notify you that Dr. Louis A. Monte, New Orleans, has been re-elected as a Governor of the American College of Chest Physicians at the annual meeting of the College held at Atlantic City, June 6-8, 1942.

NEWS ITEMS

Dr. C. M. Horton, Franklin, has recently been appointed to the Louisiana State Board of Medical Examiners in place of Dr. R. W. O'Donnell of Monroe who died.

Dr. J. A. Tucker, Baton Rouge, has been appointed physician and surgeon to the Louisiana School for the Deaf. Dr. Tucker previously served in this same capacity from 1916 through 1920.

Dr. Lucien A. LeDoux, Councilor from Louisiana of the Southern Medical Association and Member of the Executive Committee of the Council, recently attended an Executive Meeting of the Council of the Southern Medical Association which was held in Richmond, Virginia.

Assistant Surgeons Jack W. Hannah, Robert W. Razor, Jack A. End, and Lloyd B. Flint have been ordered to the United States Marine Hospital for duty. Assistant Surgeon David S. Ruhe has been ordered from New Orleans to the United States Marine Hospital at Savannah, Ga.

An ethical, well trained physician, who is a member of our organization, desires to practice in New Orleans and would like to take care of the practice of a physician called into military service until his return. If you have information concerning such a practice kindly communicate with the Journal.

Louisiana led all the states in the Southern recruiting division during last month, in enlistments in the United States Marine Corps, Captain Charles S. Williamson, III, officer in charge of recruiting, announced today.

The United Fruit Company announces that it has made provisions so that all children suffering from celiac disease will receive priority for necessary supply of bananas, despite the present shortage of bananas brought about by the U-boat activity in the Caribbean.

ACTIONS CONCERNING THE CHARITY
HOSPITAL

Illustrative of the interest taken in the Charity Hospital, there are appended here the telegram to Governor Sam Jones, a resolution by the Orleans Parish Medical Society, and a resolution of the

Executive Committee of the Tuberculosis and Public Health Association of Louisiana.

TELEGRAM TO GOVERNOR JONES:

Realizing the grave emergency of the situation facing the Charity Hospital of Louisiana at New Orleans, and the absolute necessity of immediate action to prevent the closing of this great Institution, we respectfully urge that you call the Legislature into session at the earliest possible moment in order that some immediate and satisfactory solution for the financial plight of Charity Hospital may be found.

If an immediate solution of these problems is not found, the Charity Hospital will lose the members of its resident and intern staff, the entire body of under-graduate students of the School of Nursing at Charity Hospital, as well as many skilled and technical employees. Under present conditions these positions can not be refilled and the loss of this personnel would, of a necessity, mean the closing, for a long period of time, of the Charity Hospital.

The operations of the Medical Department of Tulane University, the Medical Department of the Louisiana State University, and the Dental Department of Loyola University, would be very greatly handicapped.

Should this Hospital close, and its patients return to their homes, serious public health problems would inevitably occur through the spread of communicable disease.

The Pasteur Clinic would have to be closed, the venereal disease program would be seriously interfered with, the treatment of cancer cases discontinued and the countless thousands of the poor of Louisiana, who, for over 200 years, have looked to this Hospital as their only haven in times of sickness, would have no where to go.

Louisiana's contribution towards the National Defense would be interfered with—doctors and nurses could no longer be trained in this institution.

Should the horrors of war come to Louisiana, this institution is the only Hospital in Louisiana equipped to care for emergencies of such magnitude.

For these and many other reasons, we respectfully urge immediate action by the governing bodies of the State of Louisiana, and respectfully request a solution of this problem at the earliest possible moment.

Dr. Emmett L. Irwin, President, Louisiana State Medical Society
 Dr. Edgar Burns, President, Orleans Parish Medical Society
 Dr. H. W. Kostmayer, Dean, School of Medicine, Tulane University
 Dr. B. I. Burns, Dean, School of Medicine, Louisiana State University

Dr. Sidney Tiblier, Dean, Department of Dentistry, Loyola University
 Dr. Urban Maes, Head of Department of Surgery, Louisiana State University
 Dr. Edgar Hull, Head of Department of Medicine, Louisiana State University
 Dr. J. H. Musser, Head of Department of Medicine, Tulane University
 Dr. Alton Ochsner, Head of Department of Surgery, Tulane University
 Dr. Val H. Fuchs, Chief of Emergency Medical Service, Office of Civilian Defense
 Dr. E. L. Leckert, President, Catholic Physicians' Guild
 Dr. O. P. Daly, Director, Charity Hospital of Louisiana at New Orleans.

RESOLUTION OF THE ORLEANS PARISH MEDICAL SOCIETY:

At a special meeting held on July 30 at 8:00 p. m. in the domicile of the Society at Hutchinson Memorial, the Orleans Parish Medical Society wishes to go on record as opposing unanimously the closing of the Charity Hospital in New Orleans.

A medical calamity of such magnitude has never before befallen Louisiana, the South nor any other section of our country.

The Charity Hospital of New Orleans with its two hundred years of faithful unfaltering service to the poor is a monument not to be excelled in any section of our nation.

The doctors of the Orleans Parish Medical Society proudly claim that their services in a large measure have helped to build this great institution. As we labored to build it for the poor it is our obligation to preserve it for them. It is our duty and privilege to protect those helpless inmates who cannot protect themselves.

With a full realization of the high responsibility that is ours we urgently petition the people of New Orleans, the State of Louisiana and especially our elected representatives holding official positions of honor and trust in our city and state governments to halt at once this ugly hand of injustice that has already caused great suffering and now threatens tens of thousands with unpredictable misery and many with death.

The Orleans Parish Medical Society does not presume to judge those who are guilty, who have failed the sick and the poor in this, their hour of peril and greatest need; however, it does in no uncertain terms condemn the closing of Charity Hospital of New Orleans as an act entirely preventable. It is unjustifiable and unpardonable!

In the name of justice to the poor, sick and cripple of Louisiana; in the name of justice for the protection of this community in the event of a local civilian disaster; in the name of justice to national defense in the training of doctors and

nurses we demand the continuation of the services of Charity Hospital of New Orleans.

Respectfully submitted,
Edgar Burns, M. D., President
Edwin L. Zander, M. D., Secretary.

RESOLUTION OF THE TUBERCULOSIS AND PUBLIC HEALTH ASSOCIATION OF LOUISIANA:

WHEREAS, the Legislature of the state in its regular session of 1942, recently closed, failed to provide means for raising the necessary funds to finance the splendid program it adopted for the coming biennium, and

WHEREAS, studies made by interested and qualified citizens of the state since the closing of the regular 1942 session have shown that there is no prospect of obtaining sufficient revenue from income in sight, and

WHEREAS, the chief sufferers from the unbelievable situation in which the state finds itself are the sick and poor who through no fault of their own are dependent on the charity of the state

BE IT RESOLVED that we, the Executive Committee of the Tuberculosis and Public Health Association of Louisiana, a non-partisan group of volunteers—medical and lay representatives of the entire state, do in quarterly meeting assembled, urge upon the Governor, Honorable Sam H. Jones, that he call immediately a special session of the Legislature for the purpose of passing laws to provide funds to continue to finance:

1. The Charity Hospital of Louisiana at New Orleans which during the 2-year period ending December 31, 1941 treated 127,914 patients, maintaining a daily average population of around 2,500. The printed record shows that these patients came from every parish of Louisiana—approximately 45 per cent of the general hospital patients coming from outside New Orleans, while of the tuberculosis patients the figures are reversed with approximately 55 per cent of the patients coming from other parishes, Charity Hospital, New Orleans, treating approximately 70 per cent of all indigent tuberculosis patients of the entire state;
2. The State Department of Public Welfare which was likewise left without funds to operate for the relief of thousands of our citizens dependent upon it; and
3. Schools and other agencies left without adequate support for the biennium.

BE IT FURTHER RESOLVED that the Legislature be urged specifically to re-enact H. B. 361 to provide 400 emergency beds and other additional tuberculosis facilities for the state and that the \$940,000 called for to put it into effect for the biennium be included in any funds to be raised, and

BE IT FURTHER RESOLVED that we urge each member of the Legislature to pledge himself to forget factional differences and consider at this session only the rights of the needy of the state, to the end that there will be no adjournment until adequate funds are provided to implement the bills already passed or to be passed. Furthermore, that such legislation be enacted as will make impossible the recurrence of the situation in which the state finds itself at this time.

BE IT FURTHER RESOLVED that a copy of this resolution be sent to the Governor and to each member of the Legislature with a covering letter.

Tabulation by parishes of patients treated at Charity Hospital, New Orleans, during two-year period, 1940-1941.* Tuberculosis patients included in these figures, no separate statistics being available.

Acadia	312
Allen	303
Ascension	1,911
Assumption	1,157
Avoyelles	1,160
Beauregard	88
Bienville	23
Bossier	7
Caddo	66
Calcasieu	704
Caldwell	99
Cameron	35
Catahoula	95
Claiborne	11
Concordia	154
DeSoto	20
East Baton Rouge	4,343
East Carroll	284
East Feliciana	705
Evangeline	295
Franklin	173
Grant	106
Iberia	790
Iberville	1,545
Jackson	37
Jefferson	7,138
Jefferson Davis	284
Lafayette	283
Lafourche	2,757
LaSalle	81
Lincoln	28
Livingston	1,119
Madison	284
Morehouse	196
Natchitoches	90
Orleans	70,600
Ouachita	282
Plaquemines	906

*Figures from State of Louisiana Department of Institutions, Biennium Report for the period ending June 30, 1942.

Pointe Coupee	977
Rapides	423
Red River	8
Richland	170
Sabine	85
St. Bernard	1,333
St. Charles	1,347
St. Helena	298
St. James	1,332
St. John	1,687
St. Landry	1,021
St. Martin	190
St. Mary	1,456
St. Tammany	3,176
Tangipahoa	4,847
Tensas	142
Terrebonne	3,729
Union	39
Vermilion	337
Vernon	73
Washington	3,314
Webster	25
West Baton Rouge	521
West Carroll	93
West Feliciana	347
Winn	108

tions in the local hospitals and Western Reserve University School of Medicine, has been centered around the many medical and surgical problems arising out of the prosecution of an all-out effort to win the war, emphasizing the needs of the rapidly expanding medical services of the Army and the Navy, and consideration of special problems related to the increasing activities for civilian defense.

The program of both meetings will begin with a Joint General Assembly on Tuesday morning, November 17, with addresses by Surgeon General James C. Magee of the Medical Corps, United States Army; Surgeon General Ross T. McIntire of the Medical Corps, United States Navy; Surgeon General Thomas Parran of the United States Public Health Service; Lieutenant Colonel George Baehr, Chief Medical Officer of the United States Office of Civilian Defense; Dr. Frank H. Lahey, Chairman, Directing Board, Procurement and Assignment Service; Dr. Irvin Abell, Chairman of the Board of Regents of the College and Chairman of the Health and Medical Committee of the Federal Security Agency; and Dr. W. Edward Gallie of Toronto, President of the College. The surgeons general and Colonel Baehr will also speak at the Presidential Meeting and Convocation the same evening.

VENEREAL DISEASE CONTROL

A conference under the auspices of the United States Public Health Service having to do with Venereal Disease Control in War Time will be held in conjunction with the Eighth Annual Meeting of the American Neisserian Medical Society at Hot Springs National Park, Arkansas, October 21-24. A distinguished list of people from all over the United States is scheduled to appear on this program. The names of the speakers are well known to all those interested in the numerous and many problems of venereal disease.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The Eighth Annual Meeting of the Mississippi Valley Medical Society will be held at Quincy, Illinois, September 30 through October 2. An attractive program has been prepared. Amongst those attending will be Dr. Edward H. Cary, former president of the American Medical Association as well as the presidents of the Illinois, Iowa and Missouri State Medical Societies.

INFECTIOUS DISEASES IN LOUISIANA

For the week ending July 18, the following diseases were reported to the Section of Epidemiology of the Louisiana State Board of Health in numbers greater than ten. There were listed

MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

Medical supplies and instruments valued at \$200.00 were contributed by the Women's Auxiliary of the Shreveport Medical Society of Louisiana to the Medical and Surgical Relief Committee of America, Dr. Marjorie E. Reed, Chairman of Women's Activities announced.

The supplies were sent to Committee headquarters at 420 Lexington Avenue, New York City, and consigned to Great Britain.

CONGRESS OF COLLEGE OF SURGEONS

The 1942 Clinical Congress of the American College of Surgeons, originally scheduled for October at the Stevens Hotel, Chicago, which was taken over August 1 by the United States Army Air Corps, will be held in Cleveland, with headquarters at the Cleveland Public Auditorium, from November 17 to 20. The twenty-fifth annual Hospital Standardization Conference sponsored by the College will be held simultaneously.

The program of panel discussions, clinical conferences, scientific sessions, hospital meetings, and medical motion picture exhibitions at headquarters, and operative clinics and demonstra-

in this particular week 536 cases of syphilis, 37 of gonorrhea, 36 of bacillary dysentery, 31 of pulmonary tuberculosis, 28 of malaria, 12 each of whooping cough and septic sore throat, and 11 each of typhus fever and measles. The 36 cases of bacillary dysentery were all reported from Jackson Parish where an unusual outbreak occurred. For the following week which ended July 25, there were again listed a good many cases of syphilis, 452 in all, followed by 103 cases of gonorrhea, 24 each of malaria and pulmonary tuberculosis, 19 of bacillary dysentery, 14 of typhoid fever, and 12 of whooping cough. There were three cases of poliomyelitis listed this week, one each from Calcasieu, Franklin and Rapides Parishes. Six cases of typhus fever appeared on the summary for the week, three occurring in Vernon Parish and one each in Assumption, Orleans and Tangipahoa. Thirty-six of the cases of gonorrhea and 21 of syphilis were reported from army camps. For the week closing July 31, there were found to be 324 cases of syphilis, 108 of gonorrhea, 39 of malaria, 24 of bacillary dysentery, 17 of pulmonary tuberculosis, 13 of typhoid fever. Three additional cases of poliomyelitis were recorded this week, one each from Caddo, Vernon and Orleans Parishes. The malaria cases came almost entirely from Jackson Parish. The typhoid fever cases were scattered one to a parish except in Winn Parish where there were eight cases. Three additional cases of typhus fever were also recorded this week. For the week which terminated August 8, there were 470 cases of syphilis appearing in the weekly morbidity reports, followed in order of frequency by 36 of gonorrhea, 29 of malaria, 23 of pulmonary tuberculosis, 11 of septic sore throat, and 10 of typhoid fever. The malaria cases again came mostly from Jackson Parish, 16 in all, with seven coming from Ouachita. One case of poliomyelitis was listed this week, and one of typhus fever. The typhoid fever patients were scattered all over the state, no parish having more than West Carroll, which had three cases.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week ending July 18, 1942, there were 124 deaths in the City of New Orleans, divided 84 white, 40 negro. During this week there were only five deaths in children under one year of age. In the week which terminated July 25, the 119 deaths in the city were grouped 73 white, 46 negro, with a most remarkably few deaths in this very hot week of the summer in children under the age of one, only two small babies succumbing in this particular week. The following week, which ended August 1, there were 127 deaths in the city, 88 were in the white

and 39 in the negro race. The infant mortality rate this week was more nearly normal for the time of year. There were 15 infant deaths, 12 of which were white and three negro. In the year 1942 there have been only 316 infant deaths as contrasted with 396 in 1941 for the first 30 weeks of the year. It might be observed also that there have been nearly 200 less deaths in the city in 1942 than there were in the corresponding 30 weeks of 1941. For the week which ended August 8, the number of deaths in the city was extremely low, only 92 of the citizens of New Orleans succumbing in this particular week as contrasted with the three year average for the corresponding week of 144 deaths for this week. In the week ending August 8, 64 of the deaths were in white and 28 in the negro population of the city, and only seven of these were in children under one year of age.

THE GEOGRAPHIC DISTRIBUTION OF DEATHS FROM INFECTIOUS DISEASES LOUISIANA 1940

The accompanying map gives a 1940 distribution in Louisiana, according to parish of residence, of deaths from infectious diseases other than tuberculosis and syphilis (International List of Causes of Death).

Two or possibly three areas stand out because of markedly different death rates. The extremely high rate observed in Iberville is due to 39 deaths occurring in the leprosarium at Carville. Omitting these deaths from leprosy, the rate for Iberville is reduced to 82.7 deaths per 100,000 population; consequently, it is probable that Iberville should be included in the middle group rather than in the highest group.

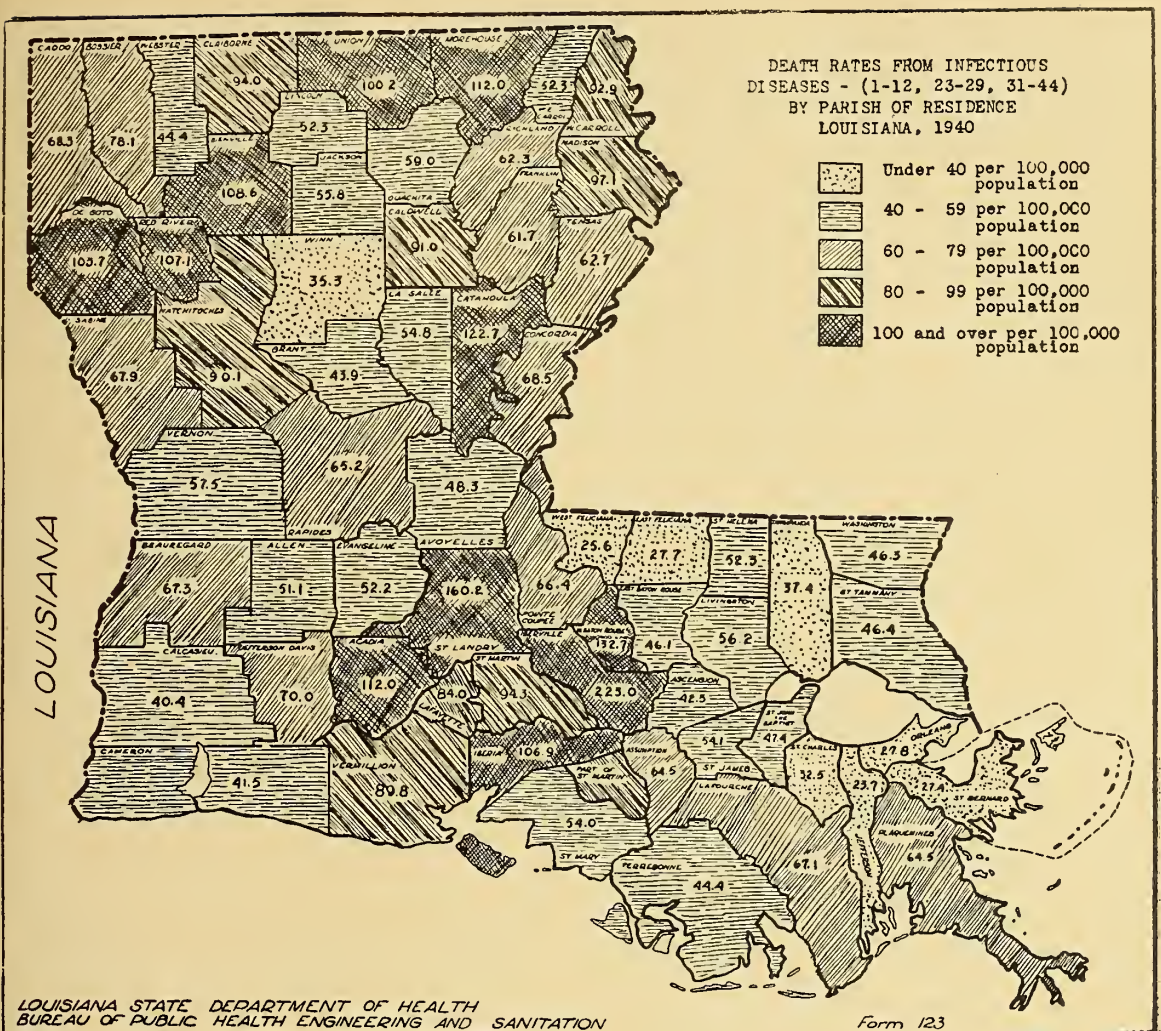
The area of low death rates, in general, touches on Lake Pontchartrain. The middle rate occurs in a rather ill defined area that might be said to be the balance of the state.

Before interpreting these rates, several factors should be considered.

First, the death rate for the infectious diseases is higher for negro than for white: respectively 89.2, negro, and 48.9 white. To see whether or not the distribution pictured was a function of the per cent of negro and of white population, these data were analyzed separately and it was concluded that in the high and low death rate areas, race distribution was not a factor.

Second, analysis on the basis of percentage distribution between rural and urban* populations shows the highest rates in those parishes having predominantly rural populations.

*The Census Bureau defines the urban population as including inhabitants of all cities over 2,500. The remaining population is classified as rural.



When examining the map, the southeastern region of the state is divided into two areas of widely differing death rates,—east of the Mississippi, an area of low death rates, while west of the Mississippi is an area of high death rates. Reasons for this difference are obscure. It is difficult to attribute these to public health agencies because some of the southeastern parishes have no full-time health services. The economic characteristics of the regions differ considerably. Truck farms predominate east of the river while in the region of higher deaths, large plantations are prevalent. Population characteristics differ also: Unlike the Florida parishes, east of the river, the Acadian parishes, west of the river, have many persons of French descent. Physical characteristics are markedly different: the Flor-

ida parishes are a hilly pine woods area; the Acadian parishes are considerably lower. It is difficult to attribute the difference in rates to physical characteristics alone since not all of these characteristics are peculiar to the whole of the two areas.

To eliminate the possibility that factors peculiar to the year 1940 were responsible for the unusual rates in these areas, a tentative map of 1941 figures was made, but the areas were apparently the same. Although no definite explanation of these different areas can be offered, their very presence may be taken as an indication of a public health problem which should be of interest to Louisiana public health workers. (Bulletin from the State Department of Health).

BOOK REVIEWS

Synopsis of the Preparation and After Care of Surgical Patients: By Hugh Calvin Ilgenfritz, M.D., and Rawley Martin Penick, M.D., St. Louis. C. V. Mosby Company, 1941. Pp. 532, illus. Price, \$5.00.

The key to the contents and purposes of the authors is indicated in the foreword by Urban Maes, in the following sentence: "The successful outcome of a surgical procedure often depends largely upon the proper preparation of the patient for the operation."

Maes further points out that controversial material has been omitted from the work. From the above statements one is led to expect that the contents of the volume are based on clinical experience, judgment, and evaluation of the best practices adopted in the management and care of surgical patients.

After a careful reading of the volume it is a pleasure to state that this little volume will fill a long felt want. It will be a useful guide for the occasional operator who needs a ready reference work. It is a volume which should be in the hands of every intern and resident in a hospital. It is an excellent text book for Junior and Senior medical students.

By careful editing, controversial matters have been eliminated as far as possible, and at the same time the authors have appended to each chapter an excellent bibliography which should make additional reading profitable.

Each chapter is well rounded and it would be difficult to pick out outstanding portions of the book without making the review too long. The print is excellent, the size of the volume makes it easily handled.

It is a pleasure to be able to recommend that this volume be used as a text for students and members of resident staffs. Each of the authors is to be congratulated on the splendid results of his labor.

This volume is a credit to the community from which it comes. If it obtains the reception which it deserves, it will go through many printings in a very short time.

ISIDORE COHN, M. D.

Diabetes Mellitus: By Wirtschafter and Korenberg. Baltimore, Williams & Wilkins Company, 1942. Pp. 186. Price, \$2.50.

This monograph by Wirtschafter and Korenberg is a well organized study of the diabetic process. It is terse, clear, and a rather complete account of the fundamentals of carbohydrate, protein, and fat metabolism. Approximately four-fifths of the book is given over to a discussion of the chemistry, physiology, and pathology of the dia-

betic process. The two final chapters deal with clinical diabetes and diabetic coma respectively.

While this book cannot compare in comprehensiveness to the larger, standard texts, it does fulfill a place as an introduction into the complexities of diabetes mellitus.

ROBERT A. KATZ, M. D.

Immunology: By Noble Pierce Sherwood. 2nd ed. St. Louis, The C. V. Mosby Company, 1941. Pp. 639, illus. Price \$6.50.

This work covers the same field as the first edition and is designed primarily for medical students. The fundamentals of immunology, considered from the standpoint of basic concepts, have been brought up to date and rearranged so that they can be outlined more readily by the student. Two new chapters appear, one on the reticulo-endothelial system, the other on serum reactions. As was the case with the first edition, it may again be stated that the author's views do not distort the evidence for or against theoretical considerations, a sound attitude in a field where theories abound.

The references at the end of each chapter, a commendable feature in the first edition, have been brought up to date.

W. A. SODEMAN, M. D.

Psychiatry In Medical Education: By Franklin G. Ebaugh, M. D. and Charles A. Rymer, M. D. New York, The Commonwealth Fund, 1942. Pp. 619. Price, \$3.50.

Amazing talent and knowledge, possessed perhaps by no other American psychiatrist than Dr. Ebaugh, is required to design and produce such a book as this one.

Material for this excellent analytical report was obtained from many diverse sources and consolidated into a review and reconsideration of the philosophy, practices, objectives and achievements of psychiatry in this country. It was prepared as a service guide to psychiatrists and educators, and is a unified effort to assist them in keeping abreast of the problems of psychiatric teaching and the methods employed to solve them.

The authors suggest that one of the greatest weaknesses in present-day psychiatry lies in the *quality* of psychiatrists, who too often are poorly trained, bound by ideas of the general hopelessness of mental illness, are uninterested in improving these matters, and lack self-understanding and a forward-looking and investigative attitude. No reasonable person can risk the assumption that existing conditions and facilities will remain unaltered. We must be prepared to deal with

emergencies. This is especially true in the field of medicine, where the ability to meet adequately an emergency may mean the difference between life and death.

Perhaps Drs. Ebaugh and Rymer's book will help doctors to have an appreciation of the emotional and social aspects of disease, to recognize personality disorders in children, and to secure a workable understanding of the clinical, therapeutic, and public health aspects of mental illness.

All of us must learn to "add it up—strike a sum—think it through"—for old attitudes no longer serve.

C. P. MAY, M. D.

Vascular Sclerosis: By Eli Moschowitz, New York, Oxford University Press, 1942. Pp. 178, illus. Price \$3.75.

This monograph is a little gem and is particularly appropriate at the present time in view of the increased interest aroused, largely by Goldblatt's investigations, in the subject of hypertension and arteriosclerosis. It was written by a man who is both a clinician and a pathologist, a man who has been interested for many years and has written extensively on the subject of arteriosclerosis.

The author maintains that the earliest changes of arteriosclerosis are those within the intima, beginning at birth, and that the subsequent changes progress with greater or lesser activity in different individuals. Basically the rapidity of the pathologic changes are in direct relationship to the height of the blood pressure. He holds that this elevation of blood pressure is the actual cause of the aging process that takes place in the vascular system and that other causes may be and should be considered as contributory rather than fundamental. In the greater circulation the author describes the various mechanisms associated with increased tension in this major vascular system, such as psychic reactions, renal disease, adrenal tumors, as well as three or four other factors that may increase the blood pressure; basically the histologic changes that develop in the condition known as arteriosclerosis are due to a mechanical cause, that is, increased pressure within the blood vessel. Moschowitz produces an equation suggesting the importance of hypertension—it is: arteriosclerosis = intravascular pressure x time.

While in accord with most of the context of the book, the reviewer would differ rather emphatically with the idea that the factor of heredity plays a small role in the genesis of hypertension. It is a concept which is quite unusual. Even Oliver Wendell Holmes expressed the importance of heredity and writers of this present day do the same. Moschowitz holds that the matter is by no means settled of course, but that if the clinical expressions of arteriosclerotic disease are common in certain fami-

lies it is the result of environment rather than heredity. Substantiating evidence is brought forth that hypertension implicates commonly the negro race is not by any means a good argument. It is true that hypertension is common in the American negro and is uncommon in the wilds of Africa, but there has been considerable infiltration of white blood into the American negro, and in the African tribes death is so common in early and midlife that but few live to an old age and if they do they are probably the ones who did not develop arteriosclerotic disease.

Although arteriosclerosis in this book on vascular sclerosis is referred to especially and there is considerable space devoted to its pathology and pathogenesis, etiology, prognosis, not to forget a very well balanced chapter on treatment, nevertheless it also contains chapters on capillary sclerosis, Monckeberg's sclerosis, phlebosclerosis, as well as sclerosis of the minor circulation of the lungs. The medical man who reads this monograph will have placed before him a summary of the most recent thoughts and studies concerning arteriosclerosis. The modern concepts of hypertension are presented succinctly and understandingly. The experimental work which the practitioner rarely has the opportunity to study and to digest is put forth clearly and reasonably comprehensively.

J. H. MUSSER, M. D.

The Lymphatic System, Its Part in Regulating Composition and Volume of Tissue Fluid: By Cecil K. Drinker. Stanford University, Cal. Stanford University Press, 1942. Pp. 101. Price, \$2.25.

This small volume is a reprint of the Lane Medical Lectures given at Stanford University in 1941. In a delightful preface, Dr. Drinker suggests that his lectures are to be considered as a new sort of cruise in a ship built of experiments and ideas. He sets out to develop the reasons why mammals have lymphatics; why the lymphatic system has been slowly turned from a casually organized accessory of the blood circulation into a physiological entity, complementing the first system and joining with it in the task of keeping the composition and volume of the mammalian tissue fluid at a steady normal level.

There are five stimulating lectures. The first deals with the physiological principles displayed in the evolution of the mammalian circulation and includes a discussion of the methods of investigation, the essential features of relations of blood and lymph, and the development of the circulatory adjustments in lower animals. This is followed by a discussion of the establishment and characteristics of the capillary circulation. The third lecture describes the appearance and elaboration of lymphatic vessels. Some of the author's experiments

are described in the next lecture, particularly those concerned with the relationships of blood, tissue fluid and lymph as illustrated by experiments upon the heart and lungs. The final lecture emphasizes the relations of the lymphatic system to practical problems in surgery and medicine, wound healing and pneumoconioses serving as respective examples of each.

The volume is replete with appropriate illustrations and much interesting historical material, as well as the author's philosophical considerations based on his many years of work in this field. The lectures are highly recommended as a supplement to the usual textbook discussions on the lymphatic system.

H. S. MAYERSON, Ph.D.

Neural Mechanisms in Poliomyelitis: By Howard A. Howe, M. D. and David Bodian, Ph. D., M. D. New York, The Commonwealth Fund, 1942. Pp. 234. Price, \$3.50.

This volume is a quiet, scrupulously precise, critical survey of a series of experimental studies of poliomyelitis in animals, and in it are presented many indispensable, authentically attested facts.

Research is an inescapable obligation of medicine. Less than ten years ago pessimism prevailed among workers seeking knowledge of this disease. Since then advances have been made. A virus has been found in the stools of patients and contacts, and the disease-inducing agent has been recovered from sewage and from flies in epidemic areas. Emphasis is now being placed on the alimentary tract as the portal of entry in man.

Neural pathways are extremely intricate and apparently amazingly susceptible to the factors which induce poliomyelitis. Work has been done on the axonal transmission of the virus, and this gives some notion of its mode and rate of travel along neural structures. Neuron susceptibility to the virus seems to be related to a physiological state of the neurons. Inflammation is perhaps due to the products of the destroyed nerve cells rather than to the direct action of the virus itself.

While the above outlined advances in our knowledge of poliomyelitis have forced pessimism to give way to optimism, it is still felt that there is a lack of investigators who have had fundamental training in neuroanatomy or neurology, and it is believed that when such adequately equipped workers, possessed of accurate facts and original ideas, attack the problems of neurotropic virus diseases, they will unearth vast fields of new knowledge.

C. P. MAY, M. D.

Insulin; Its Chemistry and Physiology: By Hans F. Jensen. The Commonwealth Fund, 1938. Pp. 252. Price, \$2.00.

This short but very thorough treatise on the chemistry and physiology of insulin deserves careful study by those interested in carbohydrate metabolism. The author has fulfilled his objective of adequately surveying the literature up to the year 1938. Since that time, substantial advances have been made in the knowledge about insulin. However, these omissions do not detract from the basic usefulness of the book.

The book is divided into seven brief chapters which are titled History of Insulin, Preparation of Insulin, Preparation and Chemistry of Crystalline Insulin, Standardization of Insulin, Administration of Insulin, Insulin Substitutes, and finally, Physiological Actions of Insulin. Jensen does not subscribe to either of the current theories advanced to explain the symptoms of diabetes, viz. 1. the non-utilization theory which explains the lack of glucose utilization in the peripheral tissues by the lack of insulin, and 2. the over-production theory, which blames diabetic symptoms on the over-production of glucose in the liver from non-carbohydrate sources such as protein and fat.

Jensen postulates the following mechanism as a basis of carbohydrate metabolism: "Carbohydrate metabolism is the resultant of a well balanced interaction of various endocrine principles . . . The reactions governing carbohydrate metabolism take place in the various organs and tissues, the most important of which is the liver. The reactions are controlled, on the one hand, by insulin and, on the other, by those endocrine secretions (pituitary, adrenal, and thyroid) which are apparently antagonistic to the physiological action of the pancreatic hormone. Thus, impaired carbohydrate metabolism may not necessarily be an index of a dysfunction of the islands of Langerhans but may indicate a dysfunction of any one or more of the other glands mentioned."

ROBERT A. KATZ, M. D.

The Pathology of Trauma: By Alan Richards Moritz, M. D. Philadelphia. Lea & Febiger, 1942. Pp. 386. Price, \$6.00.

For some time there has been a demand for a book which covers briefly and completely the pathological anatomy and histology of traumatic lesions and which gives complete details, but in a concise manner, the chief causes of such injuries and the disturbances they do or do not produce. The author has supplied this want. His definition of the various terms, such as "Mechanical Injury", "Reaction to Injury", "Abrasions", "Lacerations" and descriptions of various types of wounds are complete, leaving little argument for discussion. The various organs of the body, including both male and female, and the effect trauma may play on the possible causes of severe

injury or death, are discussed from both a negative and positive viewpoint.

The skeletomuscular system is considered in a complete manner. This book, "The Pathology of Trauma", should be of great service as a ready reference book for either the physician or lawyer who does medical legal work, and should in a short review clear up in their own minds many perplexing problems.

WILLIAM D. PHILLIPS, M. D.

The Eclipse of a Mind: By Alonzo Graves. New York, Medical Journal Press, 1942. Pp. 722. Price, \$5.00.

Here is a voluminous case study of a manic-depressive psychosis, presented to psychiatrist and sociologist for what it may be worth in the furtherance of understanding and treatment of mental disease.

The material, edited and annotated by the attending physician, consists almost exclusively of the patient's own writing—an apparently uninhibited personal narrative whose value obtains both from the author's rather rare insight into his own mental states and processes, and from the fact that publication was an unconsidered factor in the writing.

Alonzo Graves, a man of high intelligence and a fluent and prolific writer, tells his own story, progressing from ancestral history, family characteristics, and involved personal reminiscence to the first aspects of his mental illness as discerned and admitted by him both in lucid intervals and disturbed states. During the last four of eight periods of hospitalization, his personal record supplements the routine institutional case history which is given, column against column, and provides an interesting parallel and check on the correlation of symptomatology with subjective processes.

The material is left free of any interpretations or attempts to influence the thought of the reader, who may draw his own conclusions. Footnotes were included at a later date by the patient himself during periods of remission, and are rational comments on, and explanations of, periods of irrational behavior or flight of ideas.

The chief justification for the publishing of this volume lies, perhaps, in this very quality of intensive self-revelation and investigation, particularly as regards hereditary and environmental factors. To quote from an included notation of Adolf Meyer: "Psychiatry is the description and analysis of diseases which take months and years for their evolution and which require careful records of conscientious and methodical observations. . . .

We need less discussions of generalities and more records of life-times. . . ."

C. P. MAY, M. D.

Night of Flame: By Dyson Carter. New York. Reynal and Hitchcock, 1942. Pp. 337. Price, \$2.50.

This is a novel about physicians, nurses and hospitals. The scene of the story is laid in a hospital and seems to have been written by some one who is well acquainted with the usual features of hospital life, but I doubt very much if any physician or nurse who reads this story would agree with the author in regard to the way the staff acts sexually. The principal and chief activity of this particular institution, which is described most accurately, appears not to be the care of the patient but rather the sex life of the different characters. In fact the first half of the book is about as sexy as a book could be and portrays a picture of hospital life which any one who has been in intimate contact with these institutions knows is not true. Possibly the author is motivated by the fact that the lay individual would probably be more interested in the intimate contacts between man and woman than life in a hospital, which is usually quiet, staid and replete with hard work. The latter part of the book, in fact the last third, describes the fire that destroyed the institution. This is thrilling and compelling and is really a remarkable description of a hypothetical fire in an institution filled with the sick and crippled. It is an excellent piece of descriptive writing.

The book is well written and if there was not so much material about the biologic reactions of almost every character in the book, it might be highly recommended. Certainly at the present time it cannot be commended as a book for any one but the most mature. The psychiatrist and the psychologist might be willing to psychoanalyze the characters with interest but to the immature the greatest appeal of the book would be its high sensuality.

J. H. MUSSER, M. D.

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THE ROENTGEN DIAGNOSIS OF ACUTE INTESTINAL OBSTRUC- TION*

M. D. TEITELBAUM, M. D.†
NEW ORLEANS

McIver¹ speaks of a number of diverse diseases and conditions grouped under the term "acute intestinal obstruction" which have as their one most constant characteristic an abnormal stoppage of intestinal evacuation. This inability of the bowel properly to propel and expel its contents results in an intraluminal accumulation of fluid and gas sufficient in quantity to permit of early demonstration on roentgen films.

The fluid which must be constantly and invisibly present in health is composed of normal alimentary juices amounting to approximately seven liters daily. The gas is of diverse origin, the three possible sources being ingestion, diffusion through the bowel wall and endogenous formation by putrefaction and fermentation. Analysis of samples of gas obtained from the small intestine above a mechanical obstruction indicates that approximately two-thirds of the gas has been swallowed. In large bowel obstruction, ingestion plays a lesser role, much of the gas being of endogenous origin.

The source and nature of the gas seen in the small intestine of normal infants and in that of adults under a variety of circumstances unassociated with intestinal obstruction, is uncertain. The suggestion that

it is due to separation of "layering" of gas or air which is normally present but invisible because it is in solution or in an intimate mechanical mixture is untenable, except in so far as it might be applied to diffused or endogenous gas. The solubility of air in the intestinal juices is exceedingly limited and it seems unlikely that the peristaltic action of the proximal small intestine is capable of beating air into a fine froth between two points so little separated as the superior genu of the duodenum where a fluid level is frequently normally seen and the ligament of Treitz where, under comparable anatomic conditions (an inverted turn), no fluid level can be demonstrated. The impression is obtained from fluoroscopic observation that most of the air which enters the esophagus during ingestion of food does not reach the stomach and of that which does, practically all is held there by the "trap" or fluid lock of the duodenum. When a normal person assumes the left lateral recumbent position, the gas rises to the pylorus, the fluid lock is broken and globules of gas enter the small bowel. Magnusson² estimated that they traverse the small intestine in from six to fifteen minutes. The failure of this trap mechanism in infants who ordinarily spend much of their time recumbent and who swallow quantities of air, between as well as with meals, better accounts for their small intestinal air content than the assumption of deficient motility with consequent separation of gas. The same explanation is offered for adult aerophagics and probably holds in certain instances of transient small bowel distention associated with pain (biliary, renal colic, ureteral catheterization). The absence of considerable increase in the

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 28, 1942.

†From the X-Ray Department of Touro Infirmary of New Orleans.

caliber of the small bowel, the division of the visible coils in short isolated segments, usually without fluid levels, and the onward passage of the gas as seen on films made at short intervals, all weigh against a true inhibition of the intestinal motility. It is quite possible that the gaseous content of the bowel in adynamic ileus is also largely ingested but no definite statement concerning this is warranted in the absence of experimental evidence.

Irritants in the form of ingesta or active evacuants are productive of gas and frequently fluid in the intestine, sometimes to a degree which may lead to confusion.³ The residua of incompletely evacuated enemas may also account for gas and fluid levels in the large, and even in the distal small bowel. Since many patients take cathartics early in the course of abdominal symptoms and almost all with obstipation resort to enemas, queries concerning the agents employed, the time of administration and the effect obtained should be made before a diagnosis is attempted. The possibility that previously administered morphine, which even in single doses affects the intestinal motility and pattern, may be partially responsible for the roentgen findings, must also be weighed. The greatest effect of the drug is on the duodenum⁴ which is first contracted and later exhibits prolonged dilatation, while in the ileum closely grouped contracted and dilated zones may produce a pseudo-haustriation somewhat resembling the pattern of the colon. Repeated administration causes gas to collect and remain in the small bowel.

The roentgen diagnosis of obstruction depends essentially not on the demonstration of gas and fluid in the bowel, but upon the visualization of distended intestinal loops which are outlined by their gaseous and liquid contents. Furthermore, all speculation concerning the site and nature of the block centers around the relative distribution of distended and collapsed segments.

MECHANICAL OBSTRUCTION OF THE SMALL INTESTINE

The case histories and roentgenograms of 61 patients, who in the last three years

entered the hospital with clinical findings suggesting small intestinal obstruction, were reviewed and the pertinent data are displayed in Table I. From them it becomes clear that the ready, accurate diagnosis of mechanical obstruction of the small bowel has three prerequisites:

1. The obstruction must be complete or nearly complete.
2. It must be sufficiently low so that the patient cannot, by vomiting, efficiently evacuate the bowel above the obstruction.
3. Nothing which might interfere with the normal functioning of the bowel below the point of obstruction may be present.

Under ideal circumstances, the classic picture of dilated coils containing fluid and gas above the point of obstruction and empty bowel below it will obtain, and the problem will be reduced to localization of the constriction and to consideration of etiology and mechanical development.

Twenty-four patients (group I) exhibited findings warranting an unqualified diagnosis on immediate scout films. They satisfied the criteria listed above, 23 having a grade of obstruction so complete that palliative measures either were not contemplated or unsuccessfully prosecuted; all were well down in the bowel, one being in the lower jejunum and 23 in the ileum. The peritonitis found in seven cases and the strangulation evident in one did not interfere with the emptying of the distal bowel.

In 14 instances (group II), gas was present below the presumptive obstruction but the discrepancy between the caliber of the proximal and distal loops was sufficient to permit a diagnosis of incomplete obstruction of the small intestine. Neither the incidence nor the grade of peritonitis in this group suggests that a superimposed paralytic ileus on this basis was an important factor. The films of these patients offer visual confirmation of the clinical observation that constipation is not a constant sign in mechanical obstruction of the small intestine nor essential to the diagnosis.⁵ However, it is impossible to be certain in how many cases the constriction was partial, permitting passage of limited quantities of

gas, and in what number a secondary inhibition of the distal bowel, of unknown etiology but possibly associated with the duration of symptoms, was responsible for the presence of gas below the obstruction.

When the initial findings were inconclusive (group III), it sometimes was possible by serial studies at short intervals (two to four hours) to observe the completion of the obstruction and thereby to arrive at a definite diagnosis. The infrequent use of this method in the present series is attributed in part to the long duration of symptoms before admission, in part to prompt surgery in the group classified as "incomplete" and in some measure to the increasing use of intubation and suction. It must be borne in mind that even after introduction of the Miller-Abbott tube and the establishment of an apparently adequate flow, further examination is required to make certain that the tube advances without hindrance and that the bowel is being properly deflated.

Two lesions situated in the duodenum and one in the proximal jejunum (group IV) were not evident on plain roentgenograms of the abdomen. The jejunal obstruction became overt on repeated observations but those in the duodenum required the use of contrast material. The oral administration of barium sulphate should be restricted to those patients in whom no obstruction can otherwise be demonstrated and to those whose distended gut has been adequately deflated by the Miller-Abbott tube. If these precautions are observed the danger of completing the obstruction will be minimized.

Group V, in which no positive roentgen diagnosis was reached, either because there was no considerable gaseous distention of the bowel or because the distribution of gas was uniform throughout the intestinal tract, was made up for the most part of patients who were not very ill. A number were treated medically with favorable results and of those who came to surgery, several were operated more on the basis of history than of immediate necessity. Unquestionably, the optimum time for the

demonstration of the obstruction had passed and its site could be determined only by awaiting a recurrence or possibly by careful study of the contrast-filled small intestine. It might be permissible to dismiss the group as clinically insignificant except for the inclusion of three cases of strangulation obstruction. The absence of characteristic roentgen findings in some cases of obstruction with strangulation (three of six in the present series) is disconcerting. Similar difficulties in diagnosis have been encountered by others.^{6,7} There twice occurred, however, a phenomenon which is presented as a valuable, if inconstant, sign. In both instances the strangulation developed as a result of volvulus of the terminal ileum secondary to adhesions, in the right lower quadrant. The soggy, blood filled coils, suspended from their axis of torsion, sank in the pelvis as a palpable tender mass. The air-containing bowel lying above the mass delineated its superior margin on the film. While degenerated or inflamed primary pelvic tumor with associated ileus might first be suspected, roentgen findings of this description coincident with clinical manifestations of obstruction warrant immediate surgical intervention. In simple mesenteric thrombosis, although the affected loops may be heavy enough to sink into the pelvis, they are not unified by axial rotation and appear as a formless pelvic density. The appearance of intestinal distention in these cases is frequently so delayed as to be of little diagnostic value.⁸ It may fairly be stated that whenever there is any suspicion of obstruction with strangulation, negative roentgenograms should not be given much weight and positive findings accepted as a stroke of good fortune and not a *sine qua non*.

THE TIME ELEMENT IN THE DIAGNOSIS OF OBSTRUCTION

When obstruction of the small bowel occurs, proximal dilatation is gradual, the amount of gaseous distention depending among other factors on the elapsed time. While animal experiments indicate that ileus may be demonstrated within three hours of the production of a simple ob-

struction and as early as one hour after a strangulated obstruction,⁹ it must be borne in mind that these conclusions are valid only under the conditions of the experiment and not susceptible to unqualified translation into clinical practice. It may be possible to discover roentgen evidence of ileus within a very short interval after the onset of symptoms, the early findings frequently being corroborative rather than characteristic. However, few patients are seen so soon and not all of these have a block which satisfies the fundamental criteria for diagnosis on scout roentgenograms. A partial obstruction may not become complete for many hours or even several days. The experiments concerned with strangulation obstruction have no close clinical parallel. The divergence is ascribed, by Hibbard et al.,¹⁰ to differences in the effects of arterial and venous occlusion. Its practical significance, as indicated in the preceding paragraph, is considerable.

LOCALIZATION OF THE OBSTRUCTION IN THE SMALL INTESTINE

The obstructing lesion is situated at the point of transition of distended and collapsed intestine. The first step in localization lies in demonstrating that the prestenotic loop is in the small and not the large intestine. The two parts of the bowel are differentiated by their position, the thickness of their walls and the appearance of the permanent internal markings (conivalent valves and haustra). As a rule, the large bowel follows the periphery of the abdominal cavity in the form of an inverted U and is fairly constant in position. However, variations are not infrequent, the most common resulting from faulty rotation with all the colon in the left half of the abdomen or the cecum in a subhepatic position, and from incomplete attachment of the mesentery, permitting abnormal mobility of the sigmoid or ascending colon. The small intestine which is usually centrally situated with the long axis of its coils transverse superiorly and oblique below may become so distended as to fill the abdomen and apparently reach its periphery. Thus it may be difficult to determine from

position alone whether a distended loop is colon or small intestine.

The wall of the large bowel is normally thick, that of the small intestine thin. However, the one may be attenuated by distention, the other widened by hypertrophy in chronic obstruction and fluid or exudate in acute processes.

In like fashion the completely encircling Kerkring's folds of the jejunum, the smooth tubulization of the ileum and the thick, centrally deficient colonic haustra, which ordinarily permit of ready differentiation, may become indistinguishable. The direction and length of the fluid levels and a V-indentation of the outer wall of the large bowel which have also been used as diagnostic leads, may be inconclusive. If there is any doubt either because the distention is insufficient to bring out the anatomic characteristics of the unaffected segment or so great that they are effaced, a barium enema offers a certain, harmless solution.

The intestinal pattern is best seen on films made with the patient supine, while fluid levels are most satisfactorily demonstrated in postero-anterior projections made with the patient erect and in the right or left lateral recumbent positions.

The more precise localization of small intestinal obstruction depends upon the apparent position of the lowermost distended loop, the internal architecture of this loop and if possible its assignation to one of the primary anatomic groups.¹¹ Since accurate localization is a desideratum in planning a surgical approach, a critical evaluation of these basic factors is warranted. The relation of the distal visibly distended loop and the stenosis depend on how completely the patient has evacuated the proximal bowel by emesis and how much gas has entered. This process is in a large measure a function of the duration of the disease and the development of secondary adynamic ileus in the upper small intestine. It may be possible in early cases to facilitate the exchange of gas and fluid by placing the patient on his side. Postero-anterior films made in the right and left lateral recumbent position, particularly if these have

been maintained for a short time, may allow the escape of fluid from the distal prestenotic bowel and its partial replacement by gas. If some measure of this type is not employed it will be impossible from the usual supine and upright roentgenograms to determine whether there lies just below the lowest visible coil, the obstructing lesion or several feet of dilated bowel which contain fluid but no gas. In complete obstruction of longer duration where the fluid-gas interchange has been adequate, the position of the distal distended loop may be depended on to indicate the segment of bowel that is involved. If the distended loops all lie in the upper abdomen, it may be assumed that the jejunum is obstructed, if in the lower the ileum. The presence and height of the connivent valves which are clearly defined in the jejunum and less well formed distally, and identification of the primary anatomic group by the position and direction of the loops are more refined methods of arriving at the same conclusion. The enthusiasm for exact intra-enteric localization should be tempered by the realization that almost all obstructions of the small intestine are of extrinsic origin and that what is required is not the relative length of the proximal segment but the situation of the causative agent (band, or internal hernia).

This cannot accurately be predicted because the distended bowel depends on a relatively small mesenteric axis and is capable both of accordion-like expansion and rotary displacement of uncertain degree. It is possible for distended loops above a low jejunal or proximal ileal obstruction (fig. 1) to fill the abdomen in typical staircase fashion with the distal loop and assumed point of block deep in the pelvis. Similarly, all the small bowel may be so rotated in an internal hernia that the terminal ileum which is obstructed at its point of egress from the sac lies not in the right lower quadrant as might be expected from the plain films, but near the root of the mesentery (fig. 1A). Practically, these displacements, since they cannot be de-



Fig. 1. Mechanical obstruction of proximal ileum due to postoperative adhesions. Distended, horizontally directed coils fill entire abdomen with lowest distended loop deep in the pelvis.

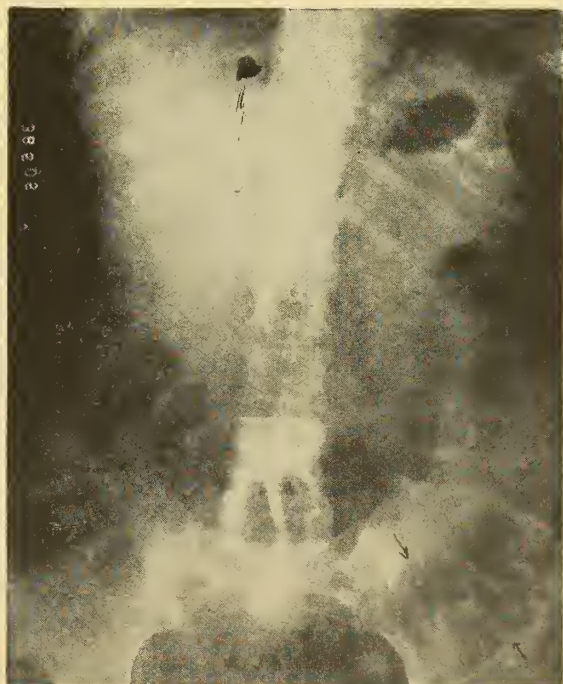


Figure 1A. Para-duodenal hernia with incarceration of a small loop of distal ileum.

tected except under certain conditions to be discussed later, are ignored.

MECHANICAL OBSTRUCTION OF THE COLON

Symptoms supervene as a rule only when obstruction of the large bowel is nearly complete. Because of this, the physical conditions for immediate unqualified diagnosis are present when the patient is first seen. Localization also is comparatively simple but should always be confirmed by a contrast enema which not only more accurately establishes the point of stenosis, but may add valuable information concerning its etiology. The patients may be divided into two major classes, those in whom the proximal distention is confined to the large bowel and those who exhibit dilatation of both the large and small intestine. There is some difference of opinion concerning the relative roles that ileal stasis, peritonitis and actual regurgitation through an incompetent type of ileo-cecal valve, play in the development of the secondary small bowel distention.¹² However, Wangenstein's position that regurgitation is rare, probably is untenable. The only real reason for the formation of the two classes is the assumption that the first represents a pure closed loop obstruction, the second a less lethal open loop type. A much more valuable indicator of the adequacy of the mechanism for spontaneous decompression is the degree of proximal distention. Whenever in distal obstructions there is a considerable increase in the diameter of the cecum, the danger of necrosis of the bowel wall is great and whatever measures are considered should be carried out without regard to the presence or absence of fluid and gas in the small intestine.

The small bowel dilatation although usually much less than that of the colon, may so predominate when the lesion is in the cecum or proximal ascending that a mistaken diagnosis of small bowel obstruction will result.

ADYNAMIC ILEUS

When a diffuse gaseous distention of the intestinal tract is present, and low mechanical obstruction is ruled out by visualization of a gas-filled rectum or by a barium

enema, the only possible roentgen diagnosis is adynamic ileus. No etiologic diagnosis can be made and there is no way to determine whether the circulation of the dilated bowel is cut off by mesenteric thrombosis or whether it is relatively normal. Separation of the distended loops, attributed either to thickening of their walls or intervening fluid, and unsharpness of the properitoneal fat line suggest peritonitis or ascites but must be correlated with clinical findings in order to arrive at dependable conclusions. It is possible that the apparent distance between adjacent coils may be increased by fluid within the lumen of the gut as well as between the coils and that this accounts for some of the discrepancies between the roentgen and anatomic findings.

When the inhibition affects only, or is largely restricted to, the small bowel and the colon is contracted or normal in caliber, the differentiation from mechanical obstruction is practically impossible. This type of dissociated distention is most apt to develop within a few days after abdominal surgery and, if it cannot be controlled by intubation, will require ileostomy. It is likely that the usual post-operative ileus is in these cases associated with fibrinous adhesions. Neither factor in itself could produce the symptoms, but the combination of the two results in a residual distention of the small intestine after the colon has regained its tone.

A mixed form of paralytic and mechanical ileus such as is produced by diverticulitis and intraperitoneal abscess particularly of appendiceal origin, may closely simulate strangulation obstruction.¹³ The direct roentgen findings are of no differential value, but where the possibility of diverticulitis is raised, a barium enema will offer positive information.

DIFFERENTIAL DIAGNOSIS OF SMALL BOWEL OBSTRUCTION

Study of the present series from an etiologic standpoint and consideration of the possibilities for differential diagnosis in acute obstruction furnish little that is novel. Statistical analysis is impossible because of the deletion of all external hernias

and of those cases with mechanical and adynamic ileus who either had no roentgen studies or were listed in the hospital records only under a primary diagnosis.

Of the small bowel obstruction, 27 were due to postoperative adhesions, almost all in the pelvis or right lower quadrant. Where there has been previous surgery, the scar may furnish a more accurate index of the position of the obstruction than does the roentgenogram. This is particularly true in early obstruction where adequate fluid-gas interchange has not occurred. However, when the symptoms are of longer duration, the roentgen localization of the distal distended loop to a point well above the incision suggests either that multiple adhesions are present or that the obstruction is of other etiology. The mechanical ileus produced by adhesions of whatever origin is of a conventional type with no distinguishing characteristics.

When a coil of small bowel rotates about a band of adhesions or when a volvulus of other origin is present, the appearance of the coil in question and of the bowel above and below it will be conditioned largely by the degree of interference with circulation. If this is minimal, the differentiation from simple obstruction may be possible by the recognition of an arcade rather than horizontal arrangement (fig. 2) of the distended loops and occasionally by the demonstration of an isolated group of distended coils (fig. 3) both the proximal and distal bowel being collapsed. With strangulation and the early development of peritonitis and inhibition ileus, there arise the difficulties which were mentioned in a preceding paragraph (fig. 4).

The recognition and classification of internal hernias are much simpler when the bowel is not acutely obstructed and contrast studies can be made. When this is impossible, the diagnosis, if feasible, is only inferential. It will depend on the relation of the hernial orifice to the mesenteric root, the length of the incarcerated segment and whether the afferent or efferent loop is constricted. When the orifice is at some distance from the attachment of the mesen-



Figure 2. Volvulus of small bowel about a band of adhesions. Arcade formation. Circulation little improved.



Figure 3. Volvulus of a short loop of distal small intestine about a band of postoperative adhesions. Circulation little improved. Isolated, distended loop.



Figure 4. Volvulus of a short loop of ileum about a band of postoperative adhesions. Strangulation with resultant gangrene. Blood filled loop forms visible mass. (Retouched).

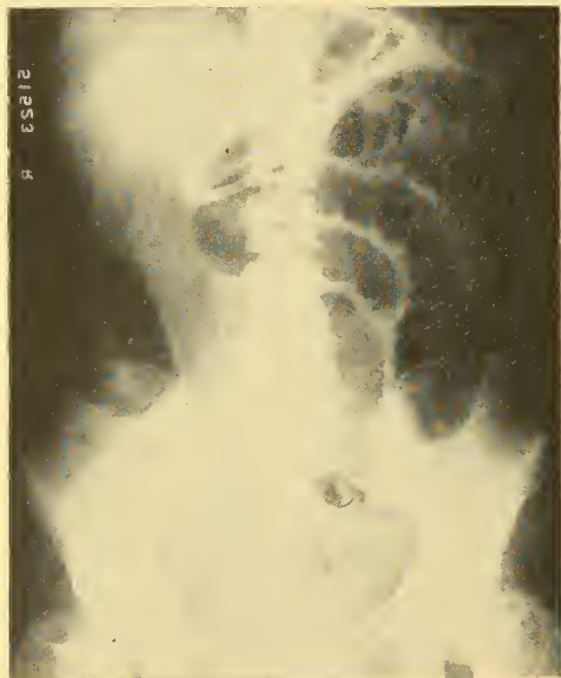


Figure 5. Group of coils in sac of para-duodenal hernia obstructed at point of egress from sac. Arcade formation attributed to associated volvulus.

tery and the capacity of the sac is small, the drag on the distended proximal loops draws them into an oblique or vertical pattern which differs from the horizontal course in simple obstruction and the arciform grouping of volvulus. This situation is best illustrated in pelvic hernias either of congenital or acquired origin (fig. 5) (one congenital prevesical hernia and one hernia through a rent in the broad ligament following a Baldy Webster suspension are listed in the present series). When the orifice of the hernial sac is close to the mesenteric root, no distraction of this kind can be expected. If the afferent loop is obstructed, a condition impossible in the more frequent left paraduodenal hernia,¹⁴ the findings will resemble those of any other high obstruction. If the obstruction is at the point of egress, the bowel within the sac will conform to its position and dimensions and this limitation (fig. 5), uninfluenced by alteration in posture, may be diagnostic.

Foreign bodies usually obstruct the lower small bowel. A more exact diagnosis can be made only if the foreign body is sufficiently dense to be directly demonstrated, or as sometimes occurs in gall stone ileus, air entering the liver through the fistulous tract, visualizes the biliary radicles.¹⁵

Obstruction of the small intestine resulting from congenital anomalies, if complete, is characterized by absence of gas in the distal bowel. Since, after the first 24 hours of life, the normal infant's intestine is uniformly distended, the absence of gas is pathognomonic. If the obstruction is high, no further study is necessary, if low, a barium enema should be administered to determine the patency and course of the colon and, if possible, to fill the distal small intestine. It is only by this method that a diagnosis of malrotation of the colon and volvulus of the mid-gut can be made. Incomplete obstruction in infancy is judged by the usual criteria, including the barium meal, if marked distention visible on plain roentgenograms does not contraindicate the procedure. No distinction between intrinsic and extrinsic block or between single and multiple points of stenosis is possible.

Primary tumors of the small bowel to produce obstruction must be quite large, annular neoplasms giving rise to more complete stenosis than polypoid masses. The obstruction is likely to be subacute or chronic, and the diagnosis is usually made by serial examination of the contrast-filled intestine.

DIFFERENTIAL DIAGNOSIS OF LARGE BOWEL OBSTRUCTIONS

Primary carcinoma of the colon and diverticulitis are, considering their high incidence, relatively infrequent causes of acute obstruction. The findings on scout films are not specific and a barium enema is necessary to determine the exact level and the nature of the etiologic agent. Secondarily infected neoplasms may present a diagnostic problem which can be solved only by surgery or by re-examination after subsidence of the acute symptoms. Metastatic carcinoma of intestinal or extra-intestinal origin may produce obstruction by direct invasion of the bowel simulating primary neoplasm, or by the implantation of multiple nodules in the serosa of the intestine with final development of both mechanical and adynamic types of ileus.

Although cysts of endogenous and mesenteric origin may produce mechanical obstruction, benign cysts and tumors of other etiology do not interfere with the progress of the intestinal contents unless they impinge a relatively fixed segment of bowel against a bony prominence. This occurred once in our series, the distal sigmoid being pinched between the large fundus of a previously "suspended" uterus and the pelvic brim. Any similarly situated mass including a pregnant uterus¹⁶ might exert the same force. It is important to remember that these obstructions which may be recognizable roentgenologically can, on occasion, be released by placing the patient in the knee chest position and permitting the pelvic mass to fall forward.

Intussusception, whether idiopathic, as in infants, or resulting from a mechanical abnormality in adults, cannot routinely be diagnosed from plain roentgenograms which only reveal obstruction of varying

grade. It is occasionally possible to identify the intussusception by observing apparent reduplication of the walls of the bowel which ensheath it. Since most intussusceptions involve the colon, the diagnosis is best made by means of a barium enema. It is important in infancy that this method and not oral administration be employed so that no time is wasted. However, where the process is confined to the small bowel, no exact roentgen diagnosis is possible. Complete reduction of the intussusception by the diagnostic enema occurs rarely. This in no way contravenes the spectacular results of Hipsley,¹⁷ the differences being in the greater length of time pressure is maintained, and in the induction of anaesthesia before the enema is given.

The only segments of the large bowel which are sufficiently mobile to be susceptible to obstruction by volvulus, are the cecum and the sigmoid. The torsion results in isolation and displacement of a short tremendously distended loop which contains a large quantity of fluid. Thus the sigmoid is rotated to the right and the twisted cecum may lie in the mid-abdomen. Moderate dilatation of the proximal bowel often develops. The diagnosis rests on the recognition that two points of obstruction, one above and one below the markedly distended coil, are present. Supplementary barium enema examination may confirm the findings of the scout film and visualize the actual torsion of the bowel.¹⁸

It is commonly assumed that in cases of imperforate anus or atresia of the distal colon, the thickness of the septum can be measured by the interval between a marker deep in the anal dimple and the upper limit of the gas column, the film being made with the infant inverted.¹³ It is almost certainly true that when no shadow identifiable as that of the rectum is seen, an atresia exists. However, when the proximal rectum is distended with gas, it is impossible to estimate the thickness of the occluding septum. The usual measurement is invalid because there is interposed between the skin marker and the upper limit of the gas column not only a septum, but also a layer of meconium of in-

TABLE I
MECHANICAL OBSTRUCTION OF THE INTESTINE

	CAUSE					DURATION					CLIN. DIAG.	TYPE					SITE					OPERATION					Medical Management					
	No. of Cases	Adhesions	Foreign Body	Intern. Hernia	Neoplasm	Cong. Anomalous	Adh. and Volvulus	Intussusception	Mesent. Thromb.	(DAYS)					Mech. (obstr.)	Simple	Strang.	Duo.	Tel.	Ileum	Immed.	6 Hrs.	12 Hrs.	24 Hrs.	More	Peritonitis		Free Fluid	Proportional Fat	Line Disturbed	Thick Bowel Wall	
*Group I—	24	13	2	2	1	2	3	1	1	3	10	4	5	2	3	21	3	23	1	....	1	22	14	....	1	2	6	7	9	5	1	
*Group II	14	6	....	1	1	2	2	....	....	2	5	....	1	1	7	10	3	12	2	....	....	....	7	....	....	1	4	3	2	1	2	....
*Group III	3	3	....	....	....	....	....	....	....	....	2	....	....	....	1	3	....	3	0	....	....	....	1	....	....	1	1	....	....	....	1	1
*Group IV	4	1	....	....	1	1	1	....	....	....	....	1	....	....	3	3	1	4	0	3	1	....	2	....	....	1	1	....	....	....	....	....
*Group V	3	2	....	....	....	....	1	....	....	....	1	....	....	....	2	2	1	2	1	....	....	....	....	1	....	1	1	....	....	....	....	....
(a).....	.....	.....	.....	.....	.....	.....	1	....	....	....	1	....	....	....	2	2	1	2	1	....	....	2	....	....	1	1	1	1	1	....	....	1
(b).....	13	2	....	1	....	1	Volv.	....	....	....	1	5	1	....	6	10	3	11	2	....	unknown	1	....	....	....	2	....	3	2	1	2	3
											</																					

*Group I: Typical findings of complete obstruction on first film. Group II: Obstruction incomplete but sufficient for diagnosis. Group III: Serial study necessary for diagnosis. Group IV: Site of obstruction too high for visualization on flat films. Group V: Degree of obstruction insufficient for definite diagnosis; (a) No distention of small or large bowel; (b) Uniform distention of small and large bowel.

determinate thickness. In the single case of imperforate anus in this series, a spontaneous perforation 24 hours after birth made it quite clear that only the anal membrane was imperforate and that meconium accounted for the remainder of a homogeneously dense shadow which measured 2 cm. in width (fig. 6).

Obstruction of the colon by accumulation of its contents is not uncommon. It is rarely present at birth (meconium ileus). The diagnosis was suggested in a newborn infant whose scout films revealed small bowel distention. An attempted barium enema failed to outline the usual pencil thin post-atretic gut but was obstructed by meconium in a rectum of normal size.

Fecal obstruction is usually due to congenital megacolon and the acute symptoms may result from the mass of the bowel content or from a superimposed volvulus. The diagnosis is often clear from the plain film, the distended colon being packed with feces, but should be confirmed by an enema to rule out any possibility of mechanical obstruction. Films made after attempted evacuation demonstrate the contractility of the dilated bowel. Occasionally, the stercoraceous mass forms a pseudo tumor which is readily distinguished from a true neoplasm. There develops in late adult life an acquired megacolon, the bowel being markedly redundant and its diameter considerably increased. These patients enter the hospital with obstipation and sometimes with symptoms suggesting obstruction. The diagnosis is not difficult.

CONCLUSIONS

1. There is a high index of correlation between the roentgen and clinical findings in intestinal obstruction.
2. Whenever the suspicion of strangulation obstruction arises, surgical intervention should not be delayed because of negative roentgen findings.
3. The recognition of the part of the small intestine which is obstructed does not necessarily localize the lesion which produces the obstruction.
4. It may be possible from the arrangement of the distended loops to make certain

assumptions regarding the mechanism of the obstruction.

5. Distention of the proximal colon when the distal large bowel is obstructed is of greater prognostic significance than the presence or absence of gas and fluid in the small bowel.

6. Postoperative adynamic ileus, when it affects chiefly the small bowel, cannot be differentiated from mechanical obstruction.

7. The commonly accepted method of measuring the septum in cases of imperforate anus is invalid.

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Figure 6. Membranous imperforation of anus. Width of apparent septum due largely to meconium.

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DISCUSSION

Dr. Urban Maes (New Orleans): It is going to be rather difficult to go into a detailed discussion of the various types of intestinal obstruction that Dr. Teitelbaum has brought to our attention. However, I think that we should credit the radiologist with the fact that he has attempted to aid us in differential diagnosis as to the cause of the obstruction. I think that Dr. Teitelbaum's separation of these cases into complete and incomplete types, and the attempt at localization are a valuable help. Localization may help us decide where to place the incision, which is very often an embarrassing problem in obscure types of intestinal obstruction. The difficulty is that x-ray does not always tell us where the obstruction is but only that there is obstruction, and I think this represents the attitude toward the interpretation of the cause and localization of gas and fluid levels. Beyond this and without the use of an opaque medium, I do not know that the radiologist can offer us anything more.

Dr. Teitelbaum has very properly said that many instances of high obstruction are fatal. The mortality of acute intestinal obstruction is still too high, around 50 to 60 per cent, and we are anxious to cut this mortality down through early diagnosis. We depend upon the radiologist for considerable help but I believe it is questionable whether the radiologist can always make a positive diagnosis for us.

We note in a recent report that Dr. Allen Whipple intubates first with the Miller-Abbott tube; his mortality rate is lower than anybody else's because he starts with the idea that there is going to be obstruction and passes the Miller-Abbott tube before the cessation of peristalsis. That has a dual advantage. It may decompress sufficiently to pre-

vent obstruction becoming complete, or if obstruction has occurred it may help the radiologist in localization if the tube has gone through the pylorus. On the other hand, we cannot place too much dependence on the use of the tube, on account of the danger of rupture. In our own series we have had nine cases in which rupture of the intestine occurred at the site of obstruction when the Miller-Abbott tube had been used. In each of these cases, the bowel was decompressed and there were no gas or fluid levels, but only some local distention.

I think that specifying the diagnosis as Dr. Teitelbaum has done is going to be of very great help, and these two cases of volvulus of the small intestine seem to be particularly instructive.

I want to emphasize one point concerning adynamic ileus particularly, and also with reference to mesenteric thrombosis. Dr. Teitelbaum is able to make suggestions but all the surgeon gets out of the x-ray picture is information about the gas and fluid levels. The radiologist does help us with diagnosis and may give considerable information in the way of localization. But I believe I am right in quoting Dr. Teitelbaum as saying that in adynamic ileus it is often not possible to make a positive diagnosis without the use of barium along with x-ray localization. However, the essayist has called attention to the fact that we should not use this procedure unless there are very special indications, and that he cannot always give exact information without it.

Dr. David I. Hirsch (Monroe): Intestinal obstruction has been one of my hobbies and I think that the present classification used today was first published by me in the New Orleans Medical and Surgical Journal in 1927. The value of the x-ray in the diagnosis of intestinal obstruction should not be under-estimated. The difficulty presented by obstructions in some cases is marked, and the x-ray tells us much, and in most instances is able to confirm the diagnosis. The combination of the x-ray with careful observation, is sufficient for a positive diagnosis in most instances. The symptoms of obstruction vary with the pathology at the time of observation. It may vary from colicky pains to exhaustion and prostration. To forego the x-ray when it is available is not advisable, for a positive x-ray diagnosis of obstruction, when the symptoms are not typical is a sufficient indication for operation. Occasionally an error is made, but the number of times in which the x-ray evidence is correct would offset the discrepancy.

Dr. M. D. Teitelbaum (in closing): As Dr. Maes suggests, it is important to introduce the Miller-Abbott tube early. If one waits any considerable interval and distention occurs, the loops of dilated bowel will push the stomach up to a horizontal position and repeated attempts at intubation may be unsuccessful.

SYMPOSIUM ON MILITARY
MEDICINE*THE MEDICAL PROFESSION AND
SELECTIVE SERVICE IN
LOUISIANAF. P. RIZZO, Major, M. C.†
NEW ORLEANS

The Medical Division of the Selective Service System in Louisiana has been charged with the responsibility of choosing, by means of rigid physical examination, those among the manpower of the State who are mentally and physically fit for military duty. How well this responsibility has been discharged is attested to by the fact that Louisiana ranks among the highest of any State in the nation from the standpoint of service, economy, and results obtained.

For a month previous to the date of the historic peacetime registration for military duty, the Medical Division along with the other divisions of the Selective Service System, was undergoing organization. With the able assistance of Dr. Musser, a local physician was appointed as examining physician for each local board. At about the same time, nine medical advisory boards composed of specialists were organized over the State to complete whatever special examinations might be required. Three of these boards are located in New Orleans, one each in Baton Rouge, Lafayette, Lake Charles, Alexandria, Monroe and Shreveport. In November, when physical examinations were begun, the Medical Division was ready.

At this time there are 417 examining physicians, 27 dentists and 88 medical advisory board members in Louisiana giving of their time and knowledge to the cause of national defense without remuneration other than consciousness of work well done. These men, together with those composing the local boards, are the backbone of the entire organization and, in my humble opinion, future events will demonstrate beyond

doubt the great importance of this voluntary work at the very first sign of danger to our country.

As of September 15, 1941, the Medical Division has physically examined 66,279 registrants. Of this number 41,090, or 62 per cent have been found physically and mentally qualified for general military duty. However, as a result of Amendment No. 50, placed into execution May 5, 1941, prescribing minimum educational requirements for general military duty, the number thus qualified was reduced to 23,565, or approximately 35 per cent of the total number examined; 12,927, or 19.5 per cent have been found qualified for limited military service and 29,787 have been placed in Class IV-F or unfit for military service. Of this latter number, approximately 16,441, or 25 per cent of the total have been placed in Class IV-F by reason of illiteracy and the remaining 13,346, or 20 per cent of the total, have been placed in Class IV-F by reason of mental, physical or moral defects.

As of October 1, 1941, 18,074 selectees have been delivered to the Army Induction Stations by Louisiana local boards; 1,792, or 9.9 per cent have been rejected at the induction stations for mental, physical or other reasons. This compares favorably with the current rejection rate of about 14 per cent for the entire nation.

The local boards and examining physicians have been kept thoroughly posted as to the results of their labors by monthly tabulations of acceptances and rejections at the Induction Station. Also, they have been kept currently posted on the number and causes for rejection as applied to their particular group. This has been conducive to a healthy competitive spirit which has undoubtedly contributed to the satisfactory results obtained.

The procedure of conducting these physical examinations is now in the process of drastic revision throughout the country. The chief purpose of this change is to give registrants 30 to 40 days' notice that they are or are not physically qualified for induction, thus permitting them to arrange their personal affairs prior to induction.

*Read before the Orleans Parish Medical Society, November 10, 1941.

†State medical officer, Louisiana Selective Service System.

The secondary consideration is to relieve the local board examining physicians and dentists of much of the drudgery and paper work required by the present system by requiring only that they make an inspection of all registrants for the purpose of ascertaining any manifestly disqualifying mental or physical defects.

The Louisiana State Board of Health and the United States Public Health Service have completed 57,012 serologic blood tests and many thousands of urinalyses and promptly reported the results to the local boards. Of these serologic blood tests performed, 49,488 have proved negative and 5,684, or 9.9 per cent positive. There were 1,840 doubtful reactors. Of the positive cases, 435 have been under treatment for a period of at least two months and many others for a shorter period of time. The Public Health Service is making strenuous efforts to contact all of the positive reactors to make certain that they undertake curative treatment.

Thus it has been found that only about 35 per cent of our young men are qualified for general military duty from a physical, mental and literate standpoint; 20 per cent have been found not physically fit but with defects that are remediable; 10 per cent have been found unfit by reason of syphilis alone; 25 per cent are found wanting in educational qualifications equal to a fourth grade education and 20 per cent have more or less irremediable defects, physical, mental or moral.

While this department has done everything possible to assist in the rehabilitation of these individuals our efforts and facilities have been insufficient. Fortunately, the President has decreed that all those with remedial defects must be rehabilitated and in my opinion, if this is followed through to a successful conclusion, it may well be worth a large part of the cost of the operation of the Selective Service System. This plan, under the supervision of the Selective Service System, calls for the rehabilitation of rejected men between the ages of 21 and 28 found by the Army to have remedial defects and who, as a result

of such treatment, will be made available for general military duty. The remedy will be provided by physicians and dentists of the locality in which the registrant resides and compensation will be paid from general funds to be made available for such purposes. This still leaves a large number of registrants with remedial conditions who should receive care and treatment from other sources. Some, of course, are able to have their own defects corrected, but a great majority will require assistance of the medical and dental professions and State institutions. It would seem to me that here is a field of work in which the medical and dental professions should take a leading part rather than lay organizations. I would like to leave this proposition with you for any consideration you may care to give it.

Complaints have been voiced that the physical standards set up by the Army are too rigid; that just because a registrant has a queer personality but is able to do hard work, he should not be rejected; that the rundown individual and one needing discipline would be helped by Army service, and the malingerer and other unstable people should be made to serve. On the surface this may appear to be the correct attitude. However, in evaluating the problem the following facts must be kept in mind: "Modern warfare differs from the past in two main characteristics: First, it is "total war" and involves the whole population. Adequate production of food and war materials, maintenance of morale in the face of attack on the civilian population and preservation of faith in our destiny require the active cooperation of the whole community. Second, modern warfare is mechanized, demanding a degree of intelligence, individual responsibility and the emotional balance never before conceived of in an Army. The Army now to be raised is a peacetime Army for the purpose of training. From it, in case of war emergency, will come the leaders of the defense forces."

For this reason it is necessary to exercise caution in the selection of men, and em-

phasis must be laid not only on physical fitness, but also on intellectual capacity and emotional soundness, that is, on ability to learn and on capacity for responsibility.

It is not sufficient merely to keep men with obvious symptoms of such conditions as epilepsy, feeble-mindedness, dementia precox and hysteria out of the Army. Chronic trouble-makers and delinquents, inveterate bums and complainers and alcoholics, who in times past were pressed into Army service in order to rid the community of them, have no place in the modern Army. They destroy the morale of their units and after the expensive training has been wasted on them, they have to be left behind, wards of the Government and a cost to the taxpayers.

I wish to take this opportunity to express my appreciation to the medical and dental professions of Louisiana for the many courtesies extended, both on my behalf and on that of the Selective Service System.

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DENTAL DEFICIENCIES AND REHABILITATION OF SELECTEES

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It is a pleasure to take part in this symposium and present to the members and guests of the Orleans Parish Medical Society the dental aspects of the Selective Service situation as of this date.

This subject covers a broad field and involves a consideration of the dental deficiencies of the selectee, a pre-habilitation program to remedy such defects before he presents to his local draft board for examination, and a rehabilitation program for the registrant who has been rejected by his board because of dental deficiencies.

The time allotted to me will not permit of a complete and detailed treatment of all phases of the subject so I shall confine my discussion to only the most salient and pertinent thoughts on the subject.

The Selective Service examinations have attracted the attention of our nation to the great number of dental cripples in our young American manhood. Report after report from Selective Service Headquarters and from other official sources tells the same story,—dental disease is the largest single cause for physical rejection. The latest reports show that approximately 20 per cent of the young men rejected for military service under the Selective Service Act are physically unfit because of dental reasons.

This unusually high percentage of rejections because of dental disease has served as nothing ever before to arouse and focus the attention of this nation on dental health. Even in normal times dental health is a necessary factor in the achievement of general health for both the individual and the community. But now in our present emergency, dental health is of even greater necessity, because of the important role it plays in developing the manpower necessary for national defense.

The dental angle of the Selective Service situation has received wide publicity and the astounding news that out of the Army's first 400,000 physical rejections, 75,000 were disqualified because of dental deficiencies came as a shock to the people of this country. This state of affairs was so apparently the result of neglect that the public wanted to know why it was not prevented.

They say this widespread condition of dental disorder should have been recognized in its beginning and that preventive measures should have been instituted long before the condition reached this advanced stage.

As a matter of fact, this condition was noted in its beginning and this high percentage of dental cripples reported by the Selective Service System was by no means a surprise to the organized dental profession. We knew quite well that a large per cent of the people of this country were not receiving adequate dental care in spite of the many existing facilities for the purpose, both private and public, and we knew that

the results of accumulation and neglect would eventually exact their full toll; and, incidentally, not only from this particular age group of young men but from the nation's population as a whole.

The dental profession pointed out to the public, the evidence of ever increasing dental neglect among the young of our country and emphasized the necessity of early dental care, if the harmful results therefrom were to be avoided. We developed and inaugurated dental health educational and dental care programs and employed every other conceivable and practical means available to develop a greater appreciation for dental prevention and dental care, and to raise the general level of public dental health. The fact that this nationwide condition of dental neglect exists today is due largely to a lack of public support. It is due to the public's failure to visit the dental office.

Dentistry does not claim ability to develop full immunity to dental caries and other dental disease, but it is able to prevent tooth loss as a result of dental disease in a majority of instances when it is given the opportunity before the condition is too far advanced.

In certain sections of the country, as for instance, our coastal parishes, the dental rejections run nearer 40 per cent than the figure previously mentioned. Dietary deficiencies unquestionably play a part in the etiology of these cases, and while early dental care might not entirely prevent their occurring it could prevent and eliminate infection and would certainly prevent much tooth loss.

It is estimated that only about 22 per cent of our nation's population is receiving dental care today. Dental science has made great advances in all of its branches during the past 25 years, and why more people have not availed themselves of what it has offered during these years in prevention and correction is difficult to understand.

Economics, without doubt, figures as one of the reasons for this. It is not the predominant reason, however, as some seem

to think, because from general public knowledge, we know that a fair percentage of those rejected for dental defects were financially able to secure adequate dental care. Numerous other reasons serve to keep people from the dental office, such as, fear of pain, procrastination, lack of time, and ignorance of the results of dental disease.

In a recent survey conducted by the United States Public Health Service in Hagerstown, Maryland, it was accurately shown that the teeth of children under fourteen are decaying much faster than they are being treated. It is a generally accepted fact with the dental health workers of the country, that today well over one-half of our school children are not receiving dental care. It is impossible to determine the amount of adult dental deficiency this may eventually cause, but it is quite evident that the amount will be tremendous if nothing is done to correct the situation at its source, that is, during childhood.

Our dental health problem begins with the teeth of the young children and this is the point where our efforts should be directed, if we hope to build sound and healthy bodies for our nation's population.

The minimum dental requirements set up by the Selective Service Act are far from being prohibitive. As a matter of fact, they are rather low. Briefly they are as follows: Twelve serviceable natural teeth in occlusion, that is, three serviceable natural incisors above and three below opposing, and three serviceable natural masticating teeth above and three below opposing. The term "masticating teeth" is understood to include bicuspid and molars and the term "incisors" includes incisors and cuspids.

A tooth is not to be considered a serviceable tooth when it has caries involving the pulp; when its root apex is infected; or when it has an excessively deep pyorrhea pocket which is beyond correction. A tooth which is carious but which can be restored to normal function by filling or crowning is considered a serviceable natural tooth. A tooth which has been restored by a pon-

tic or a dummy attached to a bridge, either removable or fixed, is considered a serviceable natural tooth, when the history and clinical appearance of the abutment teeth and the bridge are such as clearly to warrant such an assumption. This covers briefly the minimum dental requirements of the selectee. These are the dental standards such a large percentage of our nation's potential manpower failed to meet.

A fair percentage of the registrants rejected for dental defects can have such defects remedied at a reasonable cost of time and money. Our immediate problem is to salvage what we can of this great number of rejections and make them available for general military service as soon as possible.

As an approach to this problem the Dental Advisory Committee to the Selective Service System has announced a program for the pre-habilitation of registrants. This program which is being carried on in connection with the medical pre-habilitation program aims to reduce the number of dental rejections. It will attempt by means of education, to have registrants provide themselves with the dental care needed to meet Selective Service requirements, by their own dentist and at their own expense prior to their appearance before their local board for physical examination. The effectiveness of this pre-habilitation program will depend entirely upon the interest of the registrant and upon his desire and ability to secure the necessary dental attention. That all necessary dental corrections for the registrant will not be taken care of in this manner is a foregone conclusion. In view of this it is necessary that dental care be made available to registrants after they have been rejected by the Selective Service board. Registrants rejected because of dental defects will be made dentally fit for military service through the Rehabilitation Program. Dental rehabilitation is, of course, just one phase of a general physical rehabilitation program.

In a press conference on October 10, 1941, President Roosevelt called attention to conditions which have left 50 per cent of our nation's young men of draft age unfit

physically or mentally for military service and expressed the fear that this ratio represented a fair index of the health conditions of all Americans.

We learn from Selective Service Headquarters that approximately 1,000,000 men have been disqualified for Army service because of physical, mental, or educational conditions. It is estimated that of this number about 200,000 can be completely rehabilitated and made available for general military service in a reasonably short time and at not too great a cost.

President Roosevelt says he will launch a long-range program calling for the cooperation of states, counties, cities, townships, and individuals to remedy the conditions which have led to this nation-wide health situation. His first step, however, will be to launch a complete physical rehabilitation program to salvage these 200,000 rejected men who can be made available for general service in our armed forces.

REHABILITATION PROGRAM

Mr. Roosevelt has given us a general outline of his rehabilitation program and it is interesting to note that it conforms quite closely to the dental rehabilitation program sponsored by the American Dental Association. He has not announced any detailed plan for the administration of his program nor has he offered any basis to determine or regulate payment for services rendered under the program. It has been stated, however, that the rejected registrant who can qualify for general military service by having his dental defects remedied will have the privilege of having such services performed by the dentist of his choice. And where the registrant does not desire to bear the expense of correcting his dental defects in order to change his classification, the cost of such necessary dental services will be borne by the Federal Government.

The President has expressed the thought that a majority of such persons will be willing and even eager to avail themselves of this free treatment. He added, however, that the registrant is under the jurisdiction of his examining board and can be

directed to undergo whatever treatment this board deems necessary. At the expiration of a specified time the registrant must return to the board, with defects corrected, for re-examination and re-classification.

It is understood that the funds for this rehabilitation program will be administered by the designated Federal agency through official state agencies and state and local dental rehabilitation committees.

The state dental rehabilitation committee should consist of the ranking dental official of the state, representatives of the organized dental profession, and of such other groups as are considered necessary. The local dental rehabilitation committee will be under the jurisdiction of the state committee, and will be composed of the ranking local dental official, representatives of the state committee, of the organized dental profession, and of other groups deemed available. The majority of this committee, just as with the state committee, should be dentists nominated by the organized dental profession. The local rehabilitation committee will pass upon the methods of rendering dental care, standards of dental treatment provided under the program, fees, salaries, and method of compensation for dental services.

During the last World War such necessary services for registrants were performed largely by private practitioners without charge, through an agency known as the Preparedness League of Dentists. Following the declaration of peace the program was discontinued and the lesson it taught was forgotten by the public.

Today we are living in a new era and the public has had the ill effects of dental neglect brought home to them as never before. The public realizes just as does the organized dental profession, that the after-emergency dental health problems may be as serious and will probably present even greater difficulties than those occurring during the present crisis. I feel quite certain the public will not want to see programs designed for the protection of their health pass out of the picture into oblivion with the return of peace. Just what form

after-emergency programs will take and how far-reaching they will be in their effect on the private practice will depend largely on the national economic situation and the time, the attitude of our national government, and the private practitioners themselves.

SUMMARY

The American Dental Association representing the dental profession in America, has kept pace with the rapidly changing national economic and health situation and is prepared today to cooperate with the Selective Service System, and with the various branches of military service in their problems. It is prepared to take an active and leading part in the present pre-habilitation programs and in working on other problems relating to the dental health of our nation.

The organized dental profession must be just as well prepared and ready individually and collectively to assume a similar role in the after-emergency dental health problems. We recognize the close relationship between medical and dental problems and how dependent the solution of one may be on the other. The medical and dental professions have enjoyed many years of pleasant association in their approach to common problems. We may look forward to a closer fusion of these relations in the present emergency and the after-emergency problems which lie ahead.

MEDICINE IN AVIATION

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The history of aviation and aviation medicine are so closely interwoven that they are inseparable. Let us escape from the grim realities of the present day to a story of long ago when the first medical studies in aviation medicine were begun and trace its growth from a premature infant to the graceful youth it is today.

From the beginning of time, man has dreamed of soaring through the air like the birds. Ancient mythology is full of

stories of men who flew. Elijah, the prophet, ascended to heaven in a chariot of fire. The ancient Indians had a legend that tells of an "aerial chariot with sides of iron and clad with wings. It was driven through the skies until it stood over Dwarka and from there it hurled upon the city missiles that destroyed everything which they fell upon." In the 13th century, Roger Bacon, an English scientist, foresaw the conquering of the air. "The mechanism," he wrote, "must be a large hollow globe of copper or other suitable metal—as light as possible. The globe must be filled with ethereal air or liquid fire and then launched from some elevated point—when it will float like a vessel on water." He predicted the heavier-than-air air-craft. "There may be made some flying instrument so that a man sitting in the middle of the instrument and turning some mechanism, may put in motion some artificial wings—like a bird flying."

Francis Bacon (1561-1626) writing the *New Atlantis* had his character to say "we imitate also the flights of birds; we have some degrees of flying in the air; we have ships and boats for going under water—we have also means to convey sounds in pipes." Nostradamus predicted aerial warfare in the 16th century. He said, "For a long time a grey bird shall be seen in the heavens—the armies shall fight in the air a long time and the trees shall have fallen in the midst of the city."

Just 120 years before the Wright brothers flew their aeroplane at Kitty Hawk, N. C., the first medical studies were made on experimental animals to determine the ill effects of an ascent into the vast unknown. A chicken, a duck, and a sheep were placed into a basket beneath a smoke-filled balloon and sent aloft. When they descended they were thoroughly inspected for damage and as they showed none, it was decided to attempt human flight. A prisoner, who was condemned to die, was promised his freedom if he descended to the earth alive, agreed to take the first flight. Not to be outdone, a young Frenchman by the name of de Rozier decided that the honor of the

first to fly should be had by himself and not by a criminal. He carried out his plans and made his flight on October 15, 1783, uneventfully. Sometime later, during another flight, while descending, he experienced severe pains in his ears which is the first report of an ill effect of flight. In 1786, we find reference in the literature to anoxemia. A handbook of aeronautics contained the following statement:

"The spirits are raised by the purity of the air and rest in a cheerful composure. In an ascent all worries and disturbances disappear as if by magic due to the change from hot putrid and impure to cool, pure air impregnated with the invigorating aerial acids."

No doubt this "cheerful composure" was a mild anoxemia which was to demonstrate itself more forcefully as higher altitude was gained. About this time Glaisher and Coxwell made a balloon ascent to an altitude of almost 29,000 feet. As they gained altitude Glaisher began to notice that he had loss of vision and that his hearing was failing. Subsequently, his legs and arms became paralyzed. Realizing that he was in danger of collapse, he had presence of mind to pull the valve rope with his teeth and the course of the balloon was reversed, landing safely.¹

The first physician to devote his entire time to the study of medical problems of aviation was Paul Bert, a Frenchman, who worked on many problems and wrote a book describing his findings. Unfortunately, a flight carried out by three of his friends under his supervision ended in disaster. They ascended to 25,000 feet. Bert had warned them to use oxygen so as to prevent anoxemia. Because of the small amount of oxygen they carried, they decided to be conservative and use it when a high altitude was reached. Then, as today, anoxemia affected man's judgment and memory and the oxygen was never used. The balloon descended of its own accord. Two of the three were dead.

Following the work of Paul Bert, there was little interest in aviation medicine until several years after the invention of the air-

plane. Later, medical men began to consider the selection of men best suited as pilots. The pioneer work was carried out by the German Army in 1910. Previous to this time, the Germans had trained many of their officers as pilots. These officers had been carefully studied and because of these studies they came to the conclusion that those who flew required certain special aptitude and physical endowments not required of the ground crew and consequently drew up the physical standards for their pilots. Their pilot selection was systematically and methodically studied and in contrast to the English was greatly improved. The English, on the other hand, at the beginning of World War I not only used unselected pilots but men who were found unfit for other types of duty were assigned to aviation for flying training. As you can imagine, the results were disastrous. At the end of the first year it was found that out of every hundred pilots killed, two died in battle, eight from defective planes and 90 from defects in the pilots. Also, it was found that half of the pilots who were trained were breaking under the stress of war with nervous diseases. Following this the Allies began to correct their mistakes. Medical research units were set up and the results for the better were astounding.

Much knowledge was gained by the World War. In 1917, the Army School of Aviation Medicine was established and in 1918 medical personnel trained in aviation was sent by us to France. Following the war, better selection of pilots was stressed. In 1926, the department of air commerce was established. In order to promote public safety, oxygen equipment was installed in 1937 and pressure cabin aircraft in 1940.

THE FLIGHT SURGEON AND THE PILOT

Since the approach of the second world conflict, great strides have been made in aviation. The increase in size, weight, and maneuverability and technical complications of aircraft have placed many additional problems into the hands of the flight surgeon. The term "flight surgeon" was

first used in 1918 and is now widely known in this country and abroad. The flight surgeon must have a solid foundation of general medical knowledge crowned by an adequate fund of special knowledge. In this country, no one but properly qualified flight surgeons are permitted to conduct military examinations. He must have that depth of human understanding which will inspire confidence of those under his care and cause them to turn to him for guidance and advice in times of stress and strain.² The duties of the flight surgeon may be divided into four general classes: (1) He must be a physician and must always remember that he is a doctor first and a flight surgeon second; (2) pilot selection; (3) care of the flyer, and (4) research into medical problems evolving from flying.

Pilot selection has progressed by the trial and error method until today we have reached a high physical and psychologic standard which is producing fair results. Successful pilots will usually fall into a general group physically and psychologically. We desire young men between the ages of 20 and 27 with two years of college training, who give no history of chronic diseases. They must not be too tall to fold into a cock-pit nor too short to reach the rudder bars. On the average, the athletic or stocky build is more desirable than the angular type. From the pulse rate supine, standing, and after exercise and blood pressure readings supine and standing, we arrive at the circulatory efficiency index which is known as the Schneider test. No neurocirculatory asthenia is tolerated. Relaxed rings are not desirable as dive bombing markedly increases the intra-abdominal pressure with the possibility of rupture later. The family and personal history should be free of nervous and mental diseases. It is necessary that they have a vital interest in aviation with desire to fly. No one can be a successful pilot unless he has the will to fly. He should have psychologic traits of emotional warmth and ability to relax completely in contrast to the inhibited tense and over-reacting person. Under stress of examination, we look unfavorably upon a candidate

who shows excessive perspiration, cold moist palms, dilated pupils, tremors of fingers, lips, tongue or eyelids, hyperactive reflexes, and mottling of skin. History of epilepsy, migraine, acrophobia, air-sickness, and enuresis are disqualifying. Available psychologic tests leave much to be desired. We use a modification of the Otis S-A test. Visual acuity must be 20/20 or better in each eye. Range of accommodation, depth perception, heterophoria, and angle of convergence must be well within normal limits. The central color vision and visual fields are normal. Retinoscopic examination under cyclopegia is determined. The eustachian tubes must be patent. Good labyrinthine function is necessary for all flyers so that they may maintain a satisfactory relationship with the airplane.

Now that we have selected our pilot, let us consider how we may keep him flying. The problem of health for those who fly divides itself into three factors. The first of these has to do with those problems of hygienic and preventive medicine common to everyday life. Second, annually, each flyer must pass the flight physical examination if he wishes to remain in the air. Flight physical examinations are given immediately following the pilot's change of station or following any accidents or illnesses. The third problem arises as a result of flight itself. The performance of modern aircraft has now developed to the point where it exceeds the endurance of the human body. The damage connected with these problems is very real and often very serious. From now on while in the air, the pilot must know and be able to recognize the complications as they arise and the treatment thereof.

PHYSIOLOGIC DISTURBANCES

Altitude sickness, or anoxemia, is caused by the lack of oxygen as one ascends. The first symptoms begin at about 5000 feet. At this height the depth of breathing is slightly increased. At 12,000 feet, the depth of breathing is about doubled but the rate stays normal. Above 12,000 or 15,000 feet definite signs of mental and physical impairment appear. At 18,000 one passes

a critical point. Here the air pressure is one-half of what it is at sea level and the pilot must breathe twice as fast. The heart pounds, the head aches, the memory is poor, and the pilot is not able to perform any work. Eighteen thousand feet is the highest altitude at which man can live without unconsciousness and death unless oxygen is available. (Altitudes in thousands of feet: 30—death; 25—unconsciousness; 18—incomplete adjustment; 10—satisfactory adjustment; 5—complete adjustment.)

For prevention of anoxemia, the pilot must either fly at a low altitude or take oxygen by means of a mask or pressure suit, or by pressure cabin airplane. Recently, much work has been done on anoxemia in low pressure chambers.

The opposite effect of anoxemia is hyperventilation. Hinshaw describes the symptoms as feeling weak, dizzy, anxious, and a sense of tingling and numbness of the fingers, which might interfere with handling of the plane. This, if allowed to continue, will cause the pilot to forget to breathe and he will pass out cold. This is prevented by using a re-breather bag. If hyperventilation occurs the pilot should hold his breath and quickly the symptoms will clear up.

Dive bombing is an ordeal for even the most healthy pilots. From a height of 25,000 feet the plane is turned vertically downward to descend at speeds of 500-600 miles per hour; then when nearing the earth, turned suddenly again into a horizontal position. Centrifugal force drives the blood from the cerebral vessels into the larger vessels of the abdomen and brings temporary unconsciousness or the so often described "black-out." During the black-out the pilot is at the mercy of his opponent and the few seconds may be enough for the enemy to attain the advantage and destroy him. No fool-proof method has been found to prevent it but Armstrong says that the forward crouch is the most satisfactory. Many pilots scream to increase the intra-abdominal pressure. Wide inflated abdominal belts are of some help. It is reported that the Germans have a "water suit" made of rubber which is worn next to the skin.

After the outer clothing has been donned the suit is filled with water. Thusly clothed, the pilot "floats" in his suit as a fetus might *in utero* and a uniform compression over the body is obtained in acceleration, and sudden change of direction.

During the World War I, it was thought that equilibrium was purely a vestibular problem and most of the emphasis was placed on the vestibular apparatus. The secret of the pilot's balance while flying is found in his eyes rather than in his internal ears. It is commonly known that a pilot is unable to keep his ship on an even keel, no matter how perfect the mechanism of the inner ear, unless he can see the horizon or has learned to fly by instruments; and in the event of the latter, he must disregard the sensations of the inner ear, and trust his instruments. Most vestibular tests for prospective pilots are now being abandoned. If the candidate can stand on each foot alternately with his eyes closed and has no pathology of the ear, his aural balance is considered normal.

Air sickness usually develops during aerobatics or rough air. It may develop in level flight in those who have fear of flying or who are susceptible to it. The symptoms, like those of seasickness, are nausea, pallid face, clammy skin, and vomiting. No drugs are satisfactory as treatment. The cure for air-sickness is a comfortable rocking chair beneath a big oak tree.

It has been observed that if pilots were allowed to fly too much, they would become restless, irritable, and highly nervous. This was termed fatigue. Armstrong described adequately a syndrome of symptoms which he termed "aeroneurosis." The symptoms are insomnia, fitful sleep, unpleasant dreams and extreme depression upon awakening in the morning. Frequently the pilots complain of indigestion, similar to that of mild gastric ulcer, most often noticed after a hard day of flying. The treatment of aeroneurosis is adequate rest. The pilots should not be allowed to fly more than 85 hours per month. If they exceed this amount, staleness will develop. It is always desirable that the flight surgeon

keep in close contact with the pilots in his care. He should fly with them as often as practical so that he may be able better to keep them in the best state of mental and physical fitness which is so necessary in their hazardous occupation.

Let us pay tribute to the many brave and courageous pioneers who sacrificed their all that we might fly and to the flight surgeons of the Army Medical Corps who have labored long and have contributed much to aviation medicine. Even though the field is still young and growing rapidly, the ideas and principals laid down by the original army flight surgeons are still very important and time has only emphasized their value.

SUMMARY

The mission of the flight surgeon could be aptly summarized as follows: To keep as many pilots, as comfortable, in as many planes, as many hours, as practical.

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THE USE OF SULFONAMIDES IN ACUTE INFECTIONS*

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Beginning with the publication of Damagk's report in 1935, of the curative effects of prontosil in experimental streptococcal infections, chemotherapy underwent a great revival. In the early uses of the dye, and its derivatives, the use was rather indiscriminate, and some used them as cure-all. Today we are beginning to recognize the use and limitations of the drugs. The older form has given way to derivatives, each having a selective action on specific organisms, and certain limitations. It is the purpose of this paper to point out the better known facts in order that a more rational choice can be made in the selection of the correct drug, both as to the effectiveness against invading organism, and the fate of the drug in the body, and its limitations. It must be borne in

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

mind that these are powerful drugs, capable of producing harm. A thorough study should be made of the patient as to his general condition, determination of the specific organisms, to determine if renal damage is present, and a complete blood picture and possible blood typing done for future reference.

SULFANILAMIDE

Sulfanilamide is the oldest derivative, and most known about it, and still used in infections in which one of the newer drugs is also effective. With the exception of sulfadiazine, it is the easiest drug with which to maintain constant levels in the blood. It diffuses well into the tissues, and freely enters the spinal fluid. Not more than 15 per cent is acetylated into inactive form, so that it is usually not necessary to make allowances for conjugation. It is an excellent drug in meningitis,¹ hemolytic streptococcus² and *B. welchii*.³ In staphylococcal infections⁴ it is of lesser value than sulfathiazole and sulfadiazine. Erysipelas⁵ appears not to be affected to a great extent, but the incidence of complications appears to be decidedly lessened.

Dosage: When the infection is severe, it is desirable to obtain high concentration in the blood as soon as possible, and a large initial dose should be given. This rule likewise holds true with the other sulfonamide drugs. The initial dose should be 0.1 gram per kilo of body weight (2.2 pounds). It may be advisable to crush the tablets and mix with water to secure quick absorption. In severe vomiting, the drug may be dissolved in sterile water, and diluted with physiologic saline or Hartman's solution to make a one per cent solution (100 c. c. to a gram of the drug) and given as an infusion. Following the initial dose, its equivalent should be given daily, in six equal doses every four hours, day and night, and continued until there is improvement. There should be a tapering off, and continuation for a time after the patient is apparently well, to prevent relapses. In mild cases, the large initial dose may not be necessary, and 0.05 to 0.075 gram per

kilo is as a rule sufficient. The daily requirements should be given in six equal doses.

SULFAPYRIDINE

The introduction of sulfapyridine was a great step forward in the treatment of pneumonia,⁶ and many lives were saved by it. The drug proved much more effective against pneumonia than sulfanilamide, and many physicians today feel that it is still the drug of choice. It is also effective against gonococcus.⁷ Unfortunately there are numerous disadvantages which limit its usefulness, and it has largely been discontinued in favor of other sulfonamide drugs. It is rather erratically absorbed, and in many individuals a large percentage undergoes acetylation, or rendered inactive. Often there is severe vomiting, which makes further uncertainty of the absorption.

Therefore it is important that a close check be maintained to determine the concentration of both the free and conjugated forms in the blood. There is a great tendency to crystallize out in the kidney, and cause renal damage⁸ if an adequate intake of fluids is not maintained.

Dosage: In pneumonia, the initial dose is 4 grams, followed by 1 gram every four hours until resolution is well under way, or the temperature is normal; to be followed by 0.5 gram every four hours until the patient is out of bed, to prevent relapses. In gonorrhea the use of sulfapyridine is practically discontinued. In patients severely ill, it is often advisable to use sodium sulfapyridine intravenously, to insure absorption of the drug, and especially so, where vomiting is severe.

SULFATHIAZOLE

Sulfathiazole is readily absorbed and excreted, and its penetration into the tissues is good, except that it does not enter the spinal fluid very readily, and that portion which does is in an inactive form. Hence, it is not advisable to use it in meningeal infections. There is less tendency towards acetylation than with sulfapyridine, but slightly more than sulfanilamide. Because

of the rapid excretion, it is important to make careful check of the blood levels to secure adequate concentration. There is but little toxic effect, and practically no vomiting with sulfathiazole, though there are reports of severe renal damage⁹ caused by the crystallization of the conjugated forms in the kidney. The principal indication for sulfathiazole is in infections due to staphylococcus,¹⁰ pneumonia,¹¹ colon bacillus,¹² *B. welchii*,¹³ and gonococcus.¹⁴ The general rules of a large initial dose of 4 to 5 grams, followed by 1 gram every four hours day and night, and the continuance of the drug after improvement should be followed. High intakes of fluids should be maintained. Sulfathiazole has become one of the most important of the sulfonamide drugs.

SULFADIAZINE

The new drug, sulfadiazine, promises to be superior to the older drugs, at least in certain instances. One of its advantages is that it appears to be less toxic, and at

drugs. There are good reports of effectiveness against *B. welchii* infections,²¹ and some effectiveness against pemphigus,²² both in adults and the newborn.

The dosage, and general directions are the same for the other drugs of the same type.

SULFAGUANIDINE

Sulfaguanidine has a rather limited range of use. It is readily soluble, but poorly absorbed from the intestinal track, and its selective action appears to be practically limited to the organisms of the dysentery group. Because of the low degree of absorption, high concentration can be maintained in the intestinal track with little danger of toxic manifestations due to high concentration in the blood. The initial dose should be 0.1 gram per kilo, followed by 0.05 gram every four hours, day and night, until the stools are four or five or less per 24 hours, followed by 0.05 gram every eight hours for 48 to 72 hours, to prevent recurrences.

CHOICE OF SULFONAMIDE DRUGS AS TO INFECTIVE ORGANISM

St. hemolyticus	Meningococcus*	B. dysenteriae	Staphylococcus	Gonococcus
1. Sulfanilamide	1. Sulfanilamide	1. Sulfaguanidine	1. Sulfathiazole	1. Sulfadiazole
2. Sulfadiazine	2. Sulfadiazine		2. Sulfadiazine	2. Sulfapyradine
3. Sulfathiazole	3. Sulfapyridine		3. Sulfapyridine	3. Sulfadiazine
Lymphogranuloma inguinale		Pneumococcus	B. welchii	B. coli
1. Sulfadiazine		1. Sulfadiazine	1. Sulfathiazole	1. Sulfadiazine
		2. Sulfathiazole	2. Sulfadiazine	2. Sulfathiazole
		3. Sulfapyridine	3. Sulfanilamide	

*Meningococcus or any infection of meninges: Sulfathiazole does not enter spinal fluid readily, and that portion which does is inactivated.

the same time, about as effective against the invading organisms. Only a small portion is acetylated, and this form is more soluble, hence less danger of kidney damage.¹⁵ Furthermore, the upper levels of the blood concentration obtainable by oral administration has less toxic manifestations. It readily disseminates through the tissues, and enters the spinal fluid readily. It is a suitable drug to use in pneumonia,¹⁶ excellent in streptococcal,¹⁷ staphylococcal,¹⁸ meningal,¹⁹ and *B. coli*¹⁸ infections. In urinary track infections, because of its action against both *B. coli* and staphylococcus, and because of less danger of renal damage, it is the drug of first choice. In gonorrhea²⁰ it is as effective as the other

TOXIC MANIFESTATIONS

All the sulfonamide drugs produce toxic manifestations which are generally similar. Recovery is usually quick after the drug is stopped, and treatment can usually be continued with another derivative, since their toxicities are not generally additive. There are two groups of toxic manifestations, the unimportant and important.

Unimportant manifestations: Nausea and vomiting; usually seen with sulfapyridine. Dizziness; common except with sulfapyridine. Cyanosis; usually with sulfanilamide, rarely with others. Mild hemolytic anemia; not uncommon with sulfanilamide and sulfapyridine.

The development of the unimportant symptoms does not necessarily call for withdrawal of the drug, but these may be the forerunners of severe toxic reactions.

Important or dangerous manifestations: Fever; usually fifth to ninth days, and after fever due to infection has subsided, or at least dropped, and frequently rash or injection of sclerae, fever and rash not dangerous in themselves, but often precursors to: acute hemolytic anemia, a serious complication; hepatitis, a rare complication; hematuria, not uncommon with sulfapyridine and sulfathiazole, occasionally with sulfadiazine; anuria, a grave complication; agranulocytosis, the gravest complication, and most apt to develop in debilitated patients where the drug is given over a long period of time.

With the development of grave complications, it is best to stop the drug, and treat the patient symptomatically; however in urgent cases, it may be advisable to continue the drug and treat complications concurrently, except in anuria and agranulocytic anemia.

SUMMARY

1. The sulfonamide drugs fill a long desired need for specific drugs against many organisms.

2. When employing these drugs, a careful study must be made of the patient.

3. The specific organisms causing the illness must be determined.

4. The proper drug should be used, considering its specific action, its fate in the body and excretion.

5. It must be borne in mind that these are powerful drugs, capable of producing severe damage, and should not be used in minor infections.

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DISCUSSION

Dr. J. P. Sanders (Shreveport): I feel that Dr. Barber has covered this subject and it is complete without much discussion by me.

The first fact I wish to mention is that these drugs are chemotherapeutic in their action; that they have little direct action on organisms themselves. In certain complications, as in ruptured appendices and infected wounds, where one of the drugs is placed on the tissues themselves, there seems to be some stimulation in the tissue of effect of the drug. While the drugs are specific in reaction toward many infections, each drug seems

to have a specificity all its own, as brought out, and it seems to behoove us to find the drug which is most suitable in each infection being treating.

The drug concentration seems to be rather important, as Dr. Barber brought out. Large doses, far apart, are better than small doses closer together. In this way there is better concentration at one time. There is a remarkable similarity between reaction and concentration of these drugs. The experience of some of us has been that intravenous medication seems to be better in more severe infections. You get high blood levels in intravenous medication and in some cases avoid bad effects. Some dangers are there all the time but may not be sufficient to cause damage. When using the drug the patient should be watched by the physician at all times and sulfonamides should not be given without a physician's prescription.

Dr. B. J. Aymond (New Orleans): I would like to ask Dr. Barber if he uses any alkalies with these drugs. Originally it was indicated that some form of alkali, like soda bicarbonate be used; is that practice employed now?

Dr. Harry Koretsky (Pineville): Is sulfathiazole absorbed like sulfapyridine into the spinal fluid? My understanding is that sulfathiazole is not readily absorbed, while sulfapyridine is. Dr. Barber states the reverse.

Dr. D. B. Barber (In closing): There was so much to this subject that I tried to condense it as much as possible.

In answer to Dr. Aymond, I will say we do still use alkalies with sulfonamide drugs.

In answer to Dr. Koretsky; sulfathiazole is readily absorbed into the spinal fluid. Sulfathiazole should never be used in infections of the meninges.

THE USE OF DEPROTEINATED PANCREATIC EXTRACT IN THE TREATMENT OF URETEROSPASM

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The urologist who is called upon to treat such ureteral conditions as calculus, stricture and spasm is confronted with two problems. The first is the management of the actual disease state. The second is the control of the symptoms which arise from the method of therapy employed. A further complication of the latter problem is the fact that although dilatation of the ureter is the accepted method of treatment of all the ureteral states mentioned, the results are frequently only temporary in stricture and spasm. Repetition of the dilatation therefore may be necessary at more or less frequent intervals and recurrence of the reaction can be expected in most cases.

Advances in topical anesthesia have minimized much of the discomfort formerly associated with the introduction of the cystoscope into the urethra, but this variety of analgesia offers no help in passing a ureteral obstruction, for the successful per-

formance of which the patient must be completely relaxed. It is, therefore, frequently necessary to resort to intravenous or inhalation anesthesia, the repeated administration of which is obviously undesirable if it is at all possible to avoid it. Furthermore, neither general nor local anesthesia controls the reaction which often occurs after instrumentation and which may include reflex gastrointestinal disturbances as well as colic and pain. Narcotics sufficiently potent to control this type of reaction obviously should not be used frequently, both because they are likely to be habit-forming and because they may, of themselves, cause additional gastrointestinal disturbances. On the other hand, the less powerful opiates are often entirely ineffective.

The urologist, as a result, is often on the horns of a dilemma. There is something psychologically unsound in offering a patient relief which may be only temporary but which nonetheless involves a period of exaggerated discomfort or actual suffering as well as a period of disability, either in the hospital or at home, with its attendant expense and loss of time. We have in our own files the records of a number of patients, who in spite of the relief which they admitted they secured from dilatation of the ureter, were unwilling to continue treatment, or continued it only after urgent persuasion, because of the severe discom-

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fort, sometimes lasting for as long as a week, which followed instrumentation.

Of the antispasmodic agents which we have employed in the past, only two have been sufficiently useful to be worth mentioning. Trasentine (diphenyl - acetyl - diethyl - amino - ethanol - hydrochloride) and syntropan (di-ethyl - amino - dimethyl - propanolester of tropic acid) have both relieved ureteral colic in a number of our patients, but the good results have been neither striking nor uniform. In a small series of cases we injected pentothal sodium solution (6 c. c. of 2 per cent solution) into the ureter through the dilating catheter in the hope of minimizing ureterospasm, but the results were so uneven and uncertain that we soon discontinued its use.

For the past thirteen and a half months we have used deproteinated pancreatic extract in the treatment of patients who required dilatation of the ureter and the results have been so satisfactory, both in the relaxation secured during instrumentation and in the control of post-instrumentation spasm, that we feel warranted in placing on record a small series of cases in which this method has been employed.

Our studies were made with a greatly refined deproteinated pancreatic extract. This is a saline solution of a chemically derived, protein-free nitrogen fraction obtained by the acid-alcohol treatment of beef pancreas. It is adjusted to a pH of 6.5 and 6.8 and is tested for freedom from insulin, histamine and other extraneous substances. It is also tested qualitatively as to its physiologic properties.

HISTORICAL NOTE

The clinical use of deproteinated pancreatic extract began in 1926 when Frey and Kraut¹ employed a pancreatic extract which they had prepared themselves in the treatment of intermittent claudication. They found it very useful in controlling the crural pain of this condition. Their observations were confirmed in 1929 by Gley and Kisthinios,² who used an extract which they had prepared by another method and who extended its use to angina pectoris. In 1931 Wolffe and his associates³ secured

therapeutically similar results by an extract (antisympatone or desympatone) prepared by a modification of the Gley and Kisthinios method. Since that time a number of other observers^{4,6} have used pancreatic extract, as well as extracts of skeletal muscle, in various heart conditions and in various types of peripheral vascular disease. A high percentage of successful results were secured in all reported series, though not all of the cases included seem to have been chosen wisely.

Lazarus,⁷ in 1936, first used pancreatic extract in the treatment of impacted ureteral calculi and ureteral spasm. In eight cases of impacted stone and two of ureteral spasm the method failed in only one instance, in which a large stone with spicules was embedded in the ureteral mucosa.

Van Duzen, in discussing a paper by Carroll and Zingale⁸ to be mentioned shortly, reported that he had secured good results in ureteral stone by the use of pancreatic extract, although his results were less good in spasm and stricture. Ballenger, in a discussion of the same paper,⁸ also reported good results from the use of pancreatic extract in post-instrumentation kidney colic. Duncan,⁹ in 1941, reported, without details, the successful use of pancreatic extract in approximately 70 per cent of more than 500 cystoscopies. So far as we can determine, these are the only reported series in which this method has been used for the control of ureteral spasm.

Just how deproteinated pancreatic extract acts is still not clear. The use of modern preparations, tested for freedom from insulin, histamine and other extraneous substances, would seem to answer the argument, formerly advanced, that the presence of these substances might be responsible for the results secured. Gley and Kisthinios,² who agreed with Frey and Kraut¹ that pancreatic extract has vasodilator effect, also believed that it might have a depressor or inhibiting effect on the sympathetic nervous system, in accordance with the suggestion, advanced by Lowe in 1908, that the internal secretion of the pancreas might possess this property. Van Duzen,⁸

whose results were less good in spasm and stricture than in stone, thought that this difference furnished some proof that the extract acts as a brake on the production of epinephrine, as Wolffe and his associates³ also believed.

Lazarus⁷ explained the rationale of the use of pancreatic extract in ureteral spasm on the basis of Wharton's¹⁰ studies, which demonstrated an independent nerve supply for the ureter. The ureteral wall is made up of smooth muscle tissue and the cause of the impaction of calculi is assumed to be spasm of the ureteral musculature in the portion of the wall surrounding the calculus. The fundamental cause of the spasm is over stimulation, from the irritation of the calculus, of both the intrinsic and extrinsic nerve fibers supplying the affected segment of the ureter.

The investigations of Carroll and Zingale⁸ seem to leave no doubt that pancreatic extract actually affects the ureteral tissue. Their hydrophorographic studies showed that after the injection of this substance there was complete cessation, within 90 seconds, of waves which had previously been observed in the ureter. The cessation lasted for from 5 to 20 minutes, though occasionally repetition of the injection was necessary to secure this effect. In one instance of hyper-irritable ureter the waves were of great magnitude and frequency, and the patient complained of pain as each came on. Ninety seconds after the administration of the pancreatic extract the ureteral movements ceased altogether, and although they returned during the period of observation, the patient no longer complained of pain.

Although the action of pancreatic extract is still not clear, it is of interest, in this connection, that Frey and Gley¹¹ in 1939 reported an internal secretion of the pancreas which could be isolated from the urine while the pancreas was in situ but which showed a sharp decrease after pancreatectomy. This secretion is readily differentiated from insulin. Frey and Gley¹¹ consider its active agent to be a hormone elaborated by and stored in the pancreas, which passes into the blood in an inactive form

and is excreted in the urine in an active state. Its properties are apparently identical with those of extract previously prepared from pancreatic tissue by these and other observers.

PERSONAL STUDIES

Until April 1, 1941, we had for many years followed the same routine in all cases of ureteral stone or spastic ureteritis in which dilatation was required. The patient was admitted to the hospital two hours or more before the scheduled cystoscopy. One hour before the time set 3 grains of phenobarbital sodium was administered by mouth, followed, 30 minutes later, by a hypodermic injection of pantopon grain 1/3 and of atropine sulphate grain 1/150. An ounce of metycaine (2 per cent) was used locally as a surface anesthetic for the bladder and urethra. If the patient was not sufficiently relaxed, inhalation or intravenous anesthesia was used supplementally. Our present routine differs from the method first outlined in that now, just before the introduction of the cystoscope, the patient is given an intramuscular injection of 3 c. c. of deproteinized pancreatic extract.

Dilatation is then carried out by means of olivary-tipped or tapering-tipped ureteral catheters, ranging in size, as a rule, from 7 to 11 F. Multiple smaller indwelling catheters are sometimes substituted in dealing with impacted ureteral calculi. If dilatation alone is necessary, the graduated catheters are merely inserted and withdrawn. When calculi are present and single indwelling catheters are used, progressively larger ones are inserted at 24 to 48 hour intervals until the stone is passed.

Before April 1, 1941, patients were treated after instrumentation with various sedatives, such as the barbiturates or pantopon, or, if necessary, with more potent drugs, such as morphia, the medication being gauged by the necessities of the individual case. Now, in place of the sedation formerly employed routinely, additional injections of deproteinized pancreatic extract, usually in 3 c. c. doses, are used every three hours for four to six doses, that is,

for a period of 12 to 18 hours. If necessary, further injections, usually in 2 c. c. doses, are given in the hospital or at the home or office every 48 hours until all discomfort from the instrumentation has disappeared.

RESULTS

Although this communication is not intended as a statistical study, we have compared the 70 patients treated with deproteinized pancreatic extract in the 12 months' period ending April 1, 1942, with a contrast series of 72 patients treated without the extract in the similar period ending April 1, 1941. Twenty-eight patients in the pancreatic extract series and 25 in the control series had ureteral stones, and 42 in the pancreatic extract series and 47 in the control series had spastic conditions. Several patients in both series had from two to four dilatations each. Twenty-five patients in the control series also appear in the series treated with pancreatic extract. Of the 47 patients with spasm in the control series, 19 had very severe and 16 moderately severe post-instrumentation reactions; the remainder had either mild reactions or none at all. Of the 25 patients with stones in the control series, 11 had very severe and five moderately severe reaction; the remainder had either mild reactions or none at all.

In seven of the 70 patients treated with pancreatic extract, the results were no better than would have been expected with the former routine. The remainder of the group, however, either had no reactions or very mild reactions, the difference being particularly notable in patients who had been treated by the former routine, in which pancreatic extract was not given. In a few instances in which the extract alone was not effective the addition of pantopon brought quick relief, although in several of these cases the sedative, when used alone, had given no relief at all.

Occasionally a patient is discharged from the hospital within 12 hours after instrumentation, though we prefer to keep most patients hospitalized for at least 24 hours. Thereafter the duration of hospitalization

depends upon whether or not indwelling catheters are used as well as upon the character of the reaction. Generally speaking, when the ailment is of long standing or if the patient has been neglected or badly treated, so that infection complicates the picture, hospitalization may be required for from five to seven days or even longer. It is difficult to estimate the results of pancreatic extract therapy in terms of hospitalization, for that reason, in addition to the considerations already mentioned, financial considerations often cannot be ignored. We have frequently, albeit reluctantly, permitted patients with ureteral colic to leave the hospital within 24 hours because their finances would not permit a longer stay. An obvious practical advantage of pancreatic extract therapy is therefore that patients can be discharged as soon as the immediate post-instrumentation reaction is over, or, if stones are present, as soon as they are passed, and that they can be ambulatory and do their regular work even if additional injections of the extract be necessary.

COMMENT

The inclusion in the pancreatic extract series of patients treated by the former routine, in which it was not included, furnishes further proof of the efficacy of this preparation. The criticism that the use of any new drug always brings good results, for psychologic reasons, is scarcely valid. In no instance did any patient know that he had been treated by a new method until he himself had commented on the absence or mildness of the post-instrumentation reaction. We observed no particular difference in the effect of the drug on the nervous and on phlegmatic patients except that hypersensitive patients, who formerly required or, in the light of past experience, probably would have required large amounts of sedatives now required small doses or none at all.

The sole effect of deproteinized pancreatic extract seems to be to relax spasm. The patient is not disoriented nor do his mental faculties become clouded, effects which make the continued use of nembutal,

pantopon and similar sedatives highly undesirable. As a matter of fact, the very nature of these sedatives requires that the patient be kept under observation in the hospital or in bed at home. There is some stinging and burning at the site of injection of the pancreatic extract immediately after it is administered but the discomfort is only transient, and there are no other side effects.

We are not prepared to substantiate at this time observations by other urologists claiming that this substance expedites the passage of calculi. Dilatation of the ureter, whether for spasm or for stone, is inevitably followed by a certain degree of traumatic edema of the mucosa. As long as the edema lasts, a stone necessarily remains stationary. We doubt that the duration of the edema is decreased by the use of pancreatic extract. There seems no reason to doubt that post-cystoscopic ureteral colic is markedly decreased and that the relaxation secured by this agent makes the descent of the stone far less painful if not entirely painless.

Although, as had been mentioned, it is difficult to reduce the duration of the hospital stay to a statistical basis, the shortened periods for which patients are hospitalized is one of the definite advantages of this new method, as is the shorter period of disability. These are both important considerations at a time when hospital facilities are likely to be increasingly taxed and when loss of man hours of work is a matter of increasing national significance.

To date we have used deproteinized pancreatic extract only by the intramuscular route. Experimental evidence, however, suggests that the intravenous route is safe with the purified preparations now available, and that relatively large doses can be used if the injection is made very slowly.⁵

CASE REPORT

Typical of the results secured by deproteinized pancreatic extract is the following case history:

Mrs. T. E. S., a white female aged 34 years, underwent a hysterectomy for uterine fibrosis in 1939. Three weeks after operation she developed

bilateral lumbar pain, a temperature elevation to 103°F., and pyuria. Urine from both kidneys showed large amounts of pus with *Escherichia coli*, and urography demonstrated spastic ureteritis in the lower third of each ureter, more marked on the left. The patient was treated by lavage of the renal pelves and sulfacetimide until her general condition was sufficiently improved to permit ureteral dilatation.

For two years after her original attack the patient required dilatation every four to six months to control her symptoms, which continued to be particularly troublesome on the left side. Hospitalization for from three to seven days was necessary after every instrumentation, and pantopon and other sedatives were only partially successful in controlling the reaction. In spite of the discomfort, the inconvenience and expense of hospitalization, and the loss of time, the patient felt sufficiently relieved by the treatments to be willing to continue them. Dilatation of the ureter has been carried out twice in the last 12 months, with injections of deproteinized pancreatic extract added to the usual routine. The absence of reactions has been most gratifying, and each time the patient has left the hospital, in excellent condition, within 24 hours.

SUMMARY AND CONCLUSIONS

1. The control of symptoms following dilatation of the ureter is often a serious problem in the management of ureteral conditions in which spasm is a feature.

2. The use of deproteinized pancreatic extract before and after instrumentation has been attended with excellent results, both in the relaxation secured during the procedure and in the control of the post-cystoscopic spasm.

3. The history of the development of this method is briefly outlined.

4. A series of 70 cases of ureteral stone and ureterospasm treated by deproteinized pancreatic extract is analyzed in comparison with a control series of 72 similar cases treated by the same routine except without the extract.

5. The use of deproteinized pancreatic extract in patients who must be subjected to ureteral dilatation is a simple and effective method of facilitating the procedure and controlling the post-instrumentation reaction. Patients thus treated can usually be dismissed from the hospital, in the absence of contradictions, within 24 hours after simple dilatation, or, in calculus

states, as soon as the stone is passed. There are no deleterious side effects.

ACKNOWLEDGMENT

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A PHYSIOLOGIC CONCEPT OF TISSUE RESISTANCE IN THE SURGICAL DIABETIC*

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Lowered tissue resistance in diabetes is a well established fact. The exact nature and cause of this serious handicap is a problem of much perplexity and controversy. With the present knowledge of the pathologic physiology of diabetes and with the more recent contributions in the fields of im-

munity and therapy, our concept has changed considerably. The excellent results obtained in an experience of more than 100 cases of surgical diabetics during the last three years have encouraged a detailed consideration of this concept.

STATISTICS

GENERAL MORTALITY¹

	Cases	Deaths	Mortality Per Cent
John (1938)	1273	74	5.8
Standard, et al. (1938)	474	75	15.8
McKittrick (1939)	1276	102	8.0
Joslin, et al. (1940)	2941	231	7.9
Authors (1939-1942)	104	4	3.8

MORTALITY IN MAJOR AMPUTATIONS²

	Cases	Deaths	Mortality Per Cent
Zucha (1937)	100	32	32.0
Arnell (1938)	170	65	38.0
Standard, et al. (1938)	70	26	37.1
McKittrick (1940)	495	69	13.9
Authors (1939-1942)	26	3	11.5

MORTALITY IN CARBUNCLES³

	Cases	Deaths	Mortality Per Cent
Walters, et al. (1934)	16	3	18.7
Standard, et al. (1938)	45	7	15.5
McKittrick (1939)	71	4	5.6
Authors (1939-1942)	14	0	0

LOWERED TISSUE RESISTANCE IN DIABETES

In a discussion of the nature and cause of lowered tissue resistance in diabetes, various factors must be reviewed:

1. Increased sugar content of blood and tissue
2. Intrinsic physical and chemical alterations of the tissue fluids and cells
3. Subnormal immunologic reactions
 - a. Antibody formation (amboceptor)
 - b. Activity of complement in blood
4. Malnutrition
 - a. Low glycogen reserve
 - b. Hypoproteinemia
 - c. Vitamin C deficiency.

An increased sugar content of blood and tissue is the earliest idea of lowered tissue resistance and was suggested immediately after the character of the disease was recognized. Lassar⁴ held that view in 1904 and that opinion still prevails among the medical profession despite the fact that a great deal of work to the contrary has been published. Handman⁵ demonstrated that the addition of glucose to the blood in amounts

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corresponding to the limits encountered in diabetic individuals was no better a culture media for bacteria. More recently Richardson⁶ has studied the problem in the experimental animal and concludes that hyperglycemia per se cannot be the cause of lowered tissue resistance. Bayne-Jones⁷ was convinced that the explanation had to be sought elsewhere and suggests that hyperglycemia may cause it by other means than the increased sugar content alone. Pillsbury and Kulchar,⁸ as well as Mosenthal,⁹ concluded that the dehydration that resulted caused many physical and chemical alterations in the cells and fluids of the host, which definitely influence the functional capacity of the cell unit. A similar state could be produced by dehydration initiated by other means.

A subnormal immunologic response as an essential factor concerned in tissue resistance has gained more prominence lately. It is by no means a new idea; however, the average physician fails to realize its importance. In considering this defensive mechanism the defective antigenic response is one part of the deficiency, while subnormal activity of blood complement may be another.

Da Costa,¹⁰ in 1907, reported a 30 per cent lower opsonic index, among diabetics tested with a variety of bacteria. Horster¹¹ discovered that although the complement remained unchanged, the phagocytic power of the leukocytes was decreased. Recently Kestermann and Vogt¹² emphasized the importance of opsonin as a resistant factor in the diabetic and claims that it is more essential than bacteriolysins. Their experiments confirm the work of other investigators that the opsonic index is directly related to the degree of stabilization of the diabetes. Bayer and Form¹³ have demonstrated an increase in phagocytosis with the administration of insulin.

Using typhoid vaccine, Moen and Reimann¹⁴ found a poor agglutinin response in the diabetic varying in direct relation to the degree of disturbed metabolism. Richardson⁶ came to the same conclusion. Richeri and Gomez,¹⁵ and Wales and Mad-

den¹⁶ reported no significant difference of the natural or acquired immunity in diabetics to the staphylococcus. Whereas Bates and Weiss¹⁷ recently in well controlled experiments found a slower production of alpha anti-staphylolysin in the serum of diabetics and a lower maximum titre after weeks of immunization using the staphylococcus toxin, they also observed a definite correlation between the degree of response and the state of diabetic control.

Sweet,¹⁸ in 1903, found a marked decrease of hemolytic and bacteriolytic complement, while Horster,¹¹ Rockwood and Beeler,¹⁹ and later Richardson⁶ could not confirm this finding. However, Koenigsfeld²⁰ reported a drop of complement paralleling the rise in cholesterol in lipemia. Bayer and Form¹³ noted that it was temporarily restored by administration of insulin and dextrose. Most observers, apparently, believe that the fault of this defective immunity lies primarily with the amboceptor and not with complement. Their experience however has been principally with experimentally produced diabetes and well controlled diabetics. Is it not logical to assume in the uncontrolled diabetic with a long existing pathologic state, afflicted with an infection that complement may be deficient? Undoubtedly a study of complement in the blood of such individual would prove it.

The liver is the storehouse of glycogen which may be drawn upon in time of need. The organ does not contain the entire bodily supply of glycogen, for about two-thirds of it is stored in the muscles. That in the liver, however, represents the portion easily available for use by the body. A supply of glycogen in the liver is essential for a diabetic. An adequate glycogen reserve by preventing acidosis and coma is indirectly a defensive factor; a lack of it will allow the pathologic state to develop and thus lower tissue resistance. Richardson⁶ has studied the protective effect of liver glycogen per se in experimental diabetes. The ability of the experimental animal to survive after a bacterial inoculation appears to be definitely increased by the presence of larger amounts of glycogen in the liver or

by some metabolic change which accompanies this increased liver glycogen. However, he finds no significant correlation between the survival time of the animals and the glycogen of the muscle at the time of inoculation.

Inadequate carbohydrate content of the diet will result in a subnormal glycogen reserve. Rigidly controlled diabetics whose insulin dose is unnecessarily large will eventually, after prolonged treatment, be similarly affected. Occasionally in the stabilized clinic patient we encounter the latter condition and always correct it before surgery is contemplated.

Normal protein intake with the maintenance of a nitrogen balance is vital. Diets low in protein as occasionally seen in elderly diabetics too rigidly controlled will result in a state of hypoproteinemia. Diets in which the carbohydrate content is low may be as injurious because protein must be sacrificed in carbohydrate need. Protein loss may result from endogenous catabolism subsequent to chronic disease. Whatever the cause may be, a protein deficiency, although slight, will lead to hypoproteinemia. Thompson, Ravdin, et al.²¹ have demonstrated the role of hypoproteinemia in the healing of wounds. Mild as it may be, at times barely detectable by chemical studies, hypoproteinemia is a most important factor in lowering the resistance of tissue to infection. Clinically we have observed this occurrence in several cases and have realized the benefits of its correction.

The role of vitamins in diabetes in general has been extensively studied, but we will mention only that related to the defense mechanism. Frazier and Ravdin²² have studied the effect of vitamin B₁ in glycogen storage and conclude that large doses aid in the deposition in the liver. The relation of vitamin C to wound healing deserves more comment. In larger doses the beneficial effect of this vitamin is remarkable. The deficiency of vitamin C in the free clinic patient is emphasized by Holman.²³ He points out that 44 per cent of these individuals, who fall in the low income group, are on diets poor in vitamin C. Dia-

betics are prone to fall in the same category. Taffel and Harvey²⁴ claim that even mild deficiencies of cevitamic acid may be a causative factor of poor wound healing. Lanman and Ingalls²⁵ have experimentally confirmed this.

Therefore in the diabetic, lowered tissue resistance is dependent upon a number of interrelated factors. The increased sugar content of the blood and tissue per se are not of much significance but the dehydration and acidosis that follows cause intrinsic physical and chemical alterations between the tissue fluids and cells. These alterations undoubtedly play the primary part in the defective antigenic response. In addition, decreased liver glycogen, hypoproteinemia and vitamin C deficiency virtually punish more severely the handicapped cell. This diminished antigenic capacity explains the abnormal immunologic reactions, which are the direct causes of lowered resistance. Most observers believe that in the defective amboceptors lies the essential failure of the faulty mechanism. Complement is generally agreed to be in normal amounts. We personally feel that both are equally diminished and clinically the response to corrective therapy confirms our impression.

The clinical application of this physiologic concept of lowered tissue resistance embodies ways and means either to prevent the abnormal or to restore rapidly the normal state. Its importance is emphasized in the elective surgical patient where there is time to overcome the deficiencies by proper management of the diabetes and in the emergency surgical case where correction can be accomplished by substitution methods.

During the past decade, there has been a vast improvement in the mortality rate in diabetic surgery, especially in emergency cases. Although there has been no appreciable increase in the death rates among elective surgical cases, there is not a corresponding reduction. No doubt the urgent cases have received more careful attention.

It is an orthodox teaching that as long as the known criteria of stabilization exist, the patient is in a safety zone, with too lit-

the realization that all these findings are no measure of the vitally important tissue resistance. Clinical observations and many reported cases reveal that in spite of apparent rigid control the postoperative course may be stormy with impending acidosis and coma, or the wounds may not heal or become infected. On the other hand, Greene, Swanson and Jacob²⁶ reported excellent wound healing even in the presence of the ever dreaded postoperative hyperglycemia. One can readily explain these paradoxical occurrences on the basis of this new concept. The former cases were undoubtedly inadequately prepared and their clinical laboratory findings were no indication of the existing state of resistance, whereas, in the latter group the patients apparently received prolonged preoperative care and the abnormal blood sugar was definitely not in proportion to the state of cellular resistance.

ELECTIVE OPERATIONS

In the preoperative care the value of prolonged, careful control of the elective surgical diabetic cannot be overemphasized. There is no place in this classification for the uncontrolled elective. All cases which present no urgency should be made to follow the hard and fast regulations for prolonged stabilization before surgery is contemplated. It is especially in this group of cases that preventable mortalities occur, not to mention the increased morbidity. In elective surgery, time is no element and all unstabilized diabetics, admitted for operation, are referred first to the metabolic clinic for preparation. Standard, Brandaleone and Ralli^{1a} have demonstrated the value of such measures. They report a mortality of 6.9 per cent among the cases referred from the diabetic clinic in contrast to a mortality of 20.8 per cent in the non-clinic group.

An elective surgical case is ready for operation only after he meets these qualifications. The weight must be within or slightly below the standard requirements for his height. He must be well fed for a prolonged interval preoperatively, the diet being adequate in carbohydrate, protein and fat, must contain essential minerals and vitamins. Additional vitamin C must be in-

cluded. To insure a good glycogen reserve, a relatively high carbohydrate quota is advocated. The urine must never reveal more than a trace of sugar. With an adequate insulin dose a slight trace of sugar is more desirable as the fear of too rigid control is eliminated. Naturally he must be acid-free and maintained so.

If possible, insulin is given in one dose, using the protamine zinc type. If necessary, one additional dose of regular insulin is supplemented. The slow absorptive character of protamine zinc insulin secures a safety period before, during, and immediately after surgery. Minor individual variations are realized and naturally a fast rule in this regard cannot be affixed.

One of the principal means of eliminating acid radicals and of maintaining normal water balance is by an adequate fluid intake. The patient should drink enough fluid daily to insure an output of at least 1500 c.c. He usually gives full cooperation in this regard.

Although nothing is allowed by mouth for eight hours preceding surgery, protamine zinc insulin is given in full dosage the morning of the operation. The proteolysis of the unavoidable surgical trauma, fear, which through the adrenals stimulate hepatic glycogenolysis, and the anesthetic will cast sufficient glucose in the blood stream during that interval to compensate.

In elective surgery, preoperative medication is given as in non-diabetic; in older diabetics hypnotics and sedatives are given with more precaution.

It is evident, therefore, that long standing stabilization prior to surgery is desired in order to prevent the pathologic state regardless of the expense of time. There is no method of measuring the state of cellular resistance and experience has taught the safety of the above advice. Only by instituting such measures will the mortality rate in elective surgery of the diabetic approach that of the non-diabetic.

The postoperative care of the well prepared elective surgical diabetic presents no difficulty. The detail laboratory work is unnecessary, provided the patient was studied

in advance. Unless a long unexpected traumatic operation occurred, postoperative problems are not anticipated.

On returning to the bed a 2½ per cent glucose solution is given slowly intravenously. Four hours later a urinalysis is done. If sugar is present it will be in small amounts and no additional insulin will be indicated. Of more importance is the absence of sugar or the presence of acetone. If the former exists a rush blood glucose is done; it is usually within normal limits. If however, it should be low, additional glucose is given. A hypoglycemic reaction in the postoperative period is dreaded, especially in individuals past 45 years of age. Acidosis is rarely present to any degree, if so, additional glucose and insulin will be needed to combat it. In those cases requiring a supplementary dose of regular insulin, it is given subcutaneously at 6 p. m. and 1000 c.c. of 5 per cent glucose in normal saline is administered as a buffer.

If the patient requires parenteral feeding for a few days, the carbohydrate value of the diet is supplied by glucose infusions and the daily protein intake by either blood or plasma. Vitamin therapy is always continued immediately postoperatively by intramuscular or intravenous routes. The dose of sulfonamide is handled in a similar manner. As soon as the patient can tolerate oral feedings, the original caloric intake is given.

EMERGENCY OPERATIONS

Every surgical diabetic in which time is so important that a detailed preparation is not possible must come under this category. Consequently each case presents a separate problem and the management will vary according to the type of the lesion and the degree of existing acidosis. Furthermore, these two entities are interdependent and each one enhances the progress of the other.

In the realm of surgery there is no more perplexing task than the responsibility of a severe surgical diabetic with acidosis. This patient is dangerously ill with a cardiovascular collapse, dying a chemical death. The immediate chemical alterations must be corrected and this may be impossible in the presence of the surgical lesions. There-

fore, the treatment of this condition must take into consideration: first, the immediate chemical alterations, and secondly, the state of cellular resistance. All of the drastic measures available to rid the body of acid and to restore fluids and electrolytes are used. In the past as soon as the condition would permit, under spinal or intravenous anesthesia, the process was removed or its toxins diverted. With the advent of refrigerations and tourniquet, as suggested by Allen,²⁸ the deleterious effects of the surgical lesion are limited immediately or may be virtually removed.

Regardless of the type of emergency, all exhibit a lowered cellular resistance. As time will not permit the benefits of a prolonged stabilization, the administration of blood to replenish the needed protein and to restore the deficient complement will give additional support. Specific antitoxins, if available, stock vaccine or non-specific vaccine, and parenteral vitamins are of inestimable value.

The sulfonamide group of drugs have contributed greatly to success in these cases. They are, however, depressive to the defensive mechanism of the body as emphasized by Kneeland and Mulliken.²⁷ Being primarily bacteriostatic, which is of course welcome, they also tend to retard some of the function of cellular structure which adds insult to injury. Therefore, substitution or stimulative therapy is advocated to compensate for this interference.

Among the many emergencies the most common are the lesions occurring in the lower extremities and the carbuncles. It is realized that the blood supply of the lower extremity is diminished in all elderly individuals. In the diabetic this diminution may occur earlier in life but it is not necessarily greater. Nevertheless, it is a known fact that infection is more difficult to control and the consequences are greater in the diabetic. This relative difference is dependent upon lowered tissue resistance as explained in the concept and not the deficient blood supply as so frequently emphasized. The carbuncle, not affected by this factor,

better exemplifies the value of the proposed therapy.

The carbuncle is a serious lesion in the diabetic. Its presence always indicates a lowered state of tissue resistance. In the diabetic prophylaxis has justly received much attention. Brigham's statement, which Joslin^{1d} has popularized, "the washed neck like the watched pot never boils" emphasizes that scrupulous cleanliness is very essential. However, the avoidance of trauma and the maintenance of tissue resistance by careful stabilization are of equal importance.

There still remains much controversy as to the ideal treatment. We have been particularly impressed with the results obtained by devoting primary attention to systemic defenses. Naturally the control of diabetes is foremost but we are as energetic in rapidly building the defense mechanism. Since these infections are usually caused by staphylococcus both the vaccine (toxoid) and the antitoxin are given. The latter neutralizes the circulating and necrotizing toxins, while the former stimulates the antigenic capacity. Unmodified blood as a transfusion will replace complement and replenish the protein content. Vitamins B and C are given in large quantities to encourage glycogen storage in the liver and to promote cellular nutrition respectively. Sulfadiazine in full dosage is given, using the usual precautions of sulfonamide therapy.

The treatment of the carbuncle per se consists of dry heat initially until proteolysis is complete, thus forming a fluctuant mass which is then drained. The infrared lamp is preferred because of its deep penetration with the production of a marked hyperemia. One must guard against burning. The ease of application allows frequent treatments. Dry heat maintains the integrity of the skin while moist heat injures the overlying integument before proteolysis is adequate. When fluctuation indicates sufficient lysis of the involved tissues, the skin is protected with "vinylite resin"²⁹ and a small stab incision made to drain the purulent exudate. Twice

daily this cavity is irrigated with azochloramid solution until clean. Healing occurs rapidly with absolutely no loss of skin.

This seems to be the ideal treatment and although we may appear over-enthusiastic our results indicate the value. It is necessary that every detail be fulfilled in toto and that the lesion be carefully followed. Many of these factors which are used here have been tried separately but to the best of our knowledge and as far as the literature will support us, the results following the complete physiologic correction of all of the disturbances have not been reported.

SUMMARY

1. A defective immunologic mechanism, subsequent to physical and chemical alterations of the tissue fluids and cells is the primary factor concerned.
2. Inadequate glycogen reserve, hypoproteinemia and vitamin C deficiency virtually punish more severely the handicapped cell.
3. The clinical application of this concept refers to the treatment of both the elective and the emergency cases.
4. In the elective case, time is not important and complete restoration following prolonged stabilization is possible.
5. In the emergency case time is most important; therefore, supportive, substitution, and stimulative therapy is essential.
6. The management of carbuncles in the diabetic is discussed.
7. A comparative statistical study of mortalities is presented.

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DISCUSSION

Dr. Howard I. Mahorner (New Orleans): I feel grateful to Dr. Charbonnet and Dr. Schroeder for calling attention to the various factors essential to the successful management of certain diabetics.

Perhaps the ischemia factor has been given too much prominence as the cause of a lesion in the lower extremity in diabetes. To evaluate this factor carefully is difficult and is important as far as the patient's future is concerned. Because a patient has a lesion on the lower extremity and one associated with diabetes is no indication that that patient must have a radical operation. On the other hand, if radical operation is necessary withholding it invites further trouble and possible death. The question of evaluating the ischemia factor is one for which we have no absolutely accurate method of precision. Today clinical experience more than anything else will tell whether an operation should or should not be performed, and if necessary its extent. On the other hand there are certain helpful measures; for example arteriograms are made relatively safe now and in doubtful cases may have some value. The usefulness of instruments of precision such as the oscillogram and thermocouple has probably been over-rated.

To obviate the futility of useless conservatism in these cases is a very important thing. In other words it is useless to get the person over a lesion that he has at that particular time and have him nurse that leg, hoping for relief for a long period of time and six months or a year later, never having been entirely well, come to amputation. That particular problem is present in all vascular diseases and one which is difficult to determine exactly.

Conservation in surgery for furuncles and carbuncles is certainly very interesting and additional evidence that as far as inflammatory surgical risks are concerned the advent of immunotherapy and chemotherapy is mitigating the extent of the radicalness of surgery. This is not only true with these lesions but for many other conditions, for example, as acute hemogenous osteomyelitis.

I would like to ask Dr. Charbonnet two questions. What has he found to be the effect of sulfonamides on diabetes, if any; and do sulfonamides respond differently in diabetes, or does diabetes have an effect on their action?

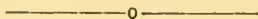
Dr. J. O. Weilbaecher, Jr. (New Orleans): It

is obvious that Dr. Charbonnet and Dr. Schroeder have presented a conclusive study of this problem. It is further obvious that because of their low mortality figures—the lowest reported—it is proved that their method of handling these cases has been highly successful. From a medical standpoint, I think one factor should be emphasized. These men have repeatedly pointed out that the dietary management of patients is at least one controllable factor that leads to acute illness of these patients. It is generally conceded, I think, that the average man handling diabetic patients usually puts patients on the lowest diet he can in order to get the lowest insulin dosage as possible. In so doing he takes the responsibility of seeing that the patient has sufficient amount of vitamins, minerals, carbohydrates, protein and fats. The best method, it would seem to me, would be to have the patient in the best possible condition for surgical procedure to prevent complications. Dr. Lucas, of Boston, thinks diabetics are handled better on maximum procedure; high insulin dosage so that patients can be given higher diet. The majority of diabetics are given insulin on a borderline diet most of the time and it is not surprising that dietary deficiency is the result. This is a most important thing in handling these patients.

Dr. Alton Ochsner (New Orleans): The important part of this presentation, it seems to me, is placing of treatment of surgical diabetics on a physiologic basis. For the first time I know of, it has been possible to treat these patients from a fundamental standpoint. Heretofore more or less all of us have directed attention toward the lesion itself without appreciating that in addition to the diabetes there are other changes which affect the patient.

The results which Dr. Charbonnet and Dr. Schroeder have gotten speak for themselves. By the institution of these physiologic methods which are simple, and treating patients as individuals with disturbed physiology, these patients can be treated just the same as non-diabetics.

Dr. L. Sidney Charbonnet, Jr. (in closing): We have taken more time than was allotted us. In answer to Dr. Mahorner's question we know of no specific effect of sulfanilamide on diabetes itself. But, as we have emphasized, the sulfonamides are depressive to the immune mechanism, which is already subnormal in the diabetic. Consequently, when this drug is given, the antigenic response of the cells must be stimulated or immune bodies supplemented by sera.



IMPRESSIONS OF VENEZUELA

VERA MOREL
NEW ORLEANS

Editorial Note: Doctors H. W. Kostmayer, Alton Ochsner, and W. A. Sodeman visited Venezuela recently in the interest of cementing cordial and closer relationships between the medical professions of Latin America and of the United States. As guests of the Standard Oil Company, they were accompanied by Doctors Alfred Gage and Kenneth R. Foucher. The object was to determine where exchange students could best fit into the curriculum of the medical schools in Venezuela and in New Orleans. The tangible result of this visit was the granting of two scholarships by the Standard Oil Company to Venezuelan youths to attend Tulane School of Medicine with a year of pre-medical study in New Orleans.

The following impressions of Venezuela and her remarkable achievements in education, sanitation and hospitalization have been recorded by Miss Morel from information obtained from the doctors visiting Venezuela, with the idea that members of the Louisiana State Medical Society may find interest in the highlights of a fascinating trip.

Flight from Miami to Maracaibo is made in less than one day by Pan-American clipper, flying over luminous blue waters and tropic isles to the surf-streaked shores of South America, the mythical Spanish Main. History lessons are recalled. This very

coast was the first land sighted by Columbus upon his third voyage when he explored the delta of the great Orinoco and sailed into the Gulf of Paria. The following year, 1499, the Spanish explorer, Alonzo de Ojeda, venturing farther westward, came upon the Gulf of Maracaibo where he found a settlement of huts built over the water and native Indians paddling about in dug-outs. So like Venice, he thought, and promptly named the gulf and the land "little Venice" or Venezuela, a country covering 352,051 square miles, rich in oil and orchids, copper and coffee, mineral and agricultural resources and good neighborliness. The population is approaching four million.

At Maracaibo, a modern industrial city created in low land surrounded by jungle, the visiting doctors were received by Dr. Alfonso Bortone and Mr. A. T. Proudfit. Oil derricks everywhere, fifty miles of them along the coast, and countless numbers "growing" in the waters of Lake Maracaibo

like a forest of straight, branchless trees. This fertile basin has proved an El Dorado of reality—a kingdom of “black gold” pouring its wealth from the earth to make Venezuela the third largest oil-producing country in the world.

The Lago Petroleum Company's plant is remarkably interesting—innumerable rows of derricks, narrow wooden walks connecting the low rows, barges, cranes, puffing engines, pile drivers, giant warehouses, machine shops, nearby tank farms, everything pitched to an incredible mammoth and expensive scale; wells being drilled under water at a depth of 140 feet, each costing approximately \$180,000.00. A cement pile weighing 40 tons is braced by additional concrete blocks and piles, the whole surmounted on a steel base where the derrick is fixed and pile driving begun. A fabulous amount of capital has been invested in exploring this rich western field, the development of which began about 14 years ago. At Lake Salina, the company's “oil camp” has a model emergency clinic, staffed by four doctors to care for the sick and injured. The Caribbean Hospital also provides for the oil companies' workers.

A magnificent \$750,000 hospital at Maracaibo has recently been completed by the Lago Company for the Government. The structure is perfection in plan and equipment, even to sponge rubber mattresses. Air-conditioned operating rooms are on the top floor. While yet unopened, it is hoped that this splendid hospital soon may be utilized for surgical and obstetrical cases where the hospitalization period is not so long or so costly as required by medical cases, chronic malaria ones predominating.

Sanitation and hospital facilities at Maracaibo were an index to Venezuela's ambitious pattern of public health and social welfare. While General Juan Vicente Gomez budgeted \$80,000,000 for the physical improvement of the country which he ruled for 25 years, concerted effort to control the diseases of this tropical climate and to improve living and working conditions coincides with the exploration and the development of the petroleum industry, although hospitals in Venezuela date to the

year 1590 and a medical school existed as early as 1721, higher education in South America pre-dated that of the United States.

The flight eastward to LaGuaira gives a panorama of varied scenery—rugged coastline fringed with islands, towering cordilleras and foothills, rivers and lagoons, dense forests, high plateau, grassy llanos, and valleys. The picturesque harbor of LaGuaira is both airport and sea outlet for Caracas, Venezuela's capital, just seven airline miles away. However, to reach Caracas, 23 twisting miles must be traversed, ascending the Sierra Nevada range and then slowly dropping to the high valley where the tile-roofed city lies, 2,500 feet above sea level, delightfully cool. The concrete highway, finished in 1926, parallels an electric railway and the ancient foot and horse trail, and leaves Caracas to join the Trans-Andean highway that leads over mountains as high as 14,000 feet to the border of Colombia, and then to Bogota. Caracas, cultural and educational center, is the birthplace of Simon Bolivar (1783-1830) whose tomb is now a shrine in the National Pantheon, formerly a Spanish cathedral. Venezuela owes her freedom from the rule of Spain to this great revolutionist and liberator whose ideals often have been likened to those of George Washington.

Eminent medical men of Caracas who received the New Orleans visitors and accorded them many courtesies and honors, both social and professional, were: Dr. José M. Espina, President of the Academy of Medicine; Dr. Herman deLasCasas, Dean of the Medical School of Central University; Dr. Antonio J. Castillo, Director of the University; Dr. Eugene P. deBellard, prominent surgeon, graduate of Tulane School of Medicine, and Chairman of the Venezuelan Section of the International Surgical Society; Dr. Francis P. Corrigan, American ambassador and surgeon; Dr. Hermanoges Rivera, Director of La Vargus Hospital; and from the Standard Oil Company, its president, Mr. Henry Linam, Drs. Victor Brito and Jose D. Leonardi.

Of particular interest was the weekly

meeting of the Academy of Medicine at Caracas, and the extraordinary session of this august body held the following afternoon in honor of the visitors who were invited also to the formal induction of the Junta Directiva, newly elected officers of the Academy. The occasion was a Sunday morning reception, formal and impressive, held in the auditorium of the University which was formerly the chapel of the monastery and retains many of the original fixtures. Many of the medical men of Venezuela are active in civic affairs. All seemed to recognize the importance of Pan-Americanism in the medical as well as the cultural and economic field, and to sense the present need for interchange of ideas and mutual understanding of public health and social welfare problems that today are as vital to North and South America as is their political unity.

Central University (Universidad Central), now over 200 years old, is closely allied with the medical institutions of Caracas, in which city there are five hospitals with 100 beds or over, averaging about six beds per 1000 inhabitants. The proceeds from the lotteries at Caracas have financed many institutions in the Federal District and made grants to other states. La Vargus, the charity hospital of Caracas, preserves the memory of José Maria Vargus, the first great surgeon of Venezuela who became the president of this country. Born in 1786, educated at Cambridge University, this brilliant scholar and scientist, came to join his friend, Bolivar, in Venezuela, where he reorganized the medical schools and instituted a program of scientific research. LaVargus Hospital has been remodeled and presents a picture of spotless wards and surroundings. Medical practice in Caracas is divided into two extremes: there are excellent provisions for the poor and for the wealthy. Apparently the moderate income group is unaccommodated. There are about 200 beds available for private patients and these beds usually are used for surgical cases. There are a number of small clinics and offices with one or two beds.

As a part of La Vargus' activities, the

Institute of Traumatology, headed by Dr. deLasCasas, has two wards of 30 beds each, for male and female patients, and service is solely for the traumatic and orthopedic cases. Photography is extensively used by Dr. deLasCasas who possesses 500 complete films of operations, and the operating room is equipped for taking motion pictures, a nurse having been trained for this work. Records of the hospital are preserved in bound volumes, complete with photographs of patients, of pathologic specimens, and x-ray films.

The nursing situation of Venezuela has been acute because of the fact that the educated girls of the country considered this work to be a demeaning task, but the need has become so great that several institutions now are established for nursing education. The Institute of Nurses at Caracas, housed in a building of Spanish architecture, is under the direction of a Spanish nurse who was trained in the United States.

The Maternity Hospital, with 160 beds, is directed by the State and presents a fine example of modern provisions for expectant mothers. There are radio-equipped ambulances, automatically-controlled elevators, beautiful operating and delivery rooms. The Clinical Hospital near the University is an impressive structure with 360 beds, modern laboratories, operating rooms, departments for research and student demonstrations. Many of the solid old structures of fireproof construction and with tile floors have been adapted for use as public institutions and private dwellings. The first modern sanitary unit of Venezuela was the house in which Bolivar lived, and the beautiful home of Dr. Corrigan was once occupied by the son of Gomez.

The increase in the number of medical students has caused crowded conditions in the Institute for Experimental Medicine and Surgery, a fact lamented by Dr. deLasCasas, its director, but the routine of teaching evidently has not encroached upon the important research projects in progress. A noticeable feature was the manner of maintaining the animal supply. Three large cages, each containing from 30 to 50 dogs, were used for keeping the animals in quar-

antine for varying periods so that, when ready for experimental use, they are in suitable condition. Scientific talks given by the Tulane doctors were eagerly received by the faculty and students of this institution which in turn contributed much of interest to the visitors.

The Antituberculosis Hospital, of which there is a counterpart at Merida, is six miles from Caracas, a costly building planned for the most modern care of a large number of patients, but at present uncrowded because of the policy to care particularly for surgical cases and later to admit only those in which some form of collapse therapy is practical. A tomograph is used in this institution. In the tuberculosis receiving hospital in the city, free treatment and free medicines are given to the poor. Adults and children are cared for in separate sections. In Caracas there are a children's hospital, a psychiatric hospital, an institute for cancer, and a Red Cross hospital.

Caripito lies in eastern Venezuela, a few miles from Quiriquire on the Rio Don Juan, which is an outlet to the Caribbean. The oil camp is 26 kilometers from the airport and the guest house of the camp three miles from the wharf where barges receive the oil. The river may be reached in a Ford on railroad tracks through dense jungle that makes one aware of the almost overpowering beauty of tropical forests, as well as of the tremendous task, even hardships endured, that this trail might be opened and kept open. Here was witnessed the carving of an oil field, a port, and a city, out of prairie and forests—an achievement that approached a marvel. Mr. J. A. Clark, Dr. Brito, and Dr. Bulmer, medical administrator of the company, served as hosts and guides. Impressive is the modern aspect of Caripito with its oiled roads and streamlined houses. Some 70 miles away in another camp the homes were constructed of hollow tile made by the oil company. There a dispensary was under construction. Another camp is the site of the original hospital, of wooden frame, now used as a temporary structure. The surgeons of the group were invited to operate at the Cari-

pito hospital and later at the General Hospital in Maracaibo.

Opportunity to enjoy the social and home life of Venezuela was provided. Entertainment is usually in the homes or clubs, seldom in crowds. For sports, there are horse racing, two bull rings, American baseball, and the national game of the people, bolas, derived from the ancient game of bowls, and played usually on the country roads. The Caracas Country Club has been erected on the site of a famous hacienda and is exceedingly attractive with low red-tiled roofs, abundance of mango trees, an 18 hole golf course and beautifully landscaped grounds. On the mountain slope near the Club are the homes of the Linams and the deBellards. Mrs. deBellard is of the noble Ybarra family, and represents the gracious and charming hostesses of Venezuela. She is president of the Venezuelan Red Cross. Mr. Linam possesses a medallion presented him by General Gomez for his services in Venezuela.

Only a poet or a painter could describe the natural beauty of this rich country, the greens of her tropical forests, wonderfully pictured in Hudson's immortal "Green Mansions"; the color of her flamboyant trees, acacias, mimosas, bougainvillea, bananas, and from the mountains tall-stemmed calla lilies, and orchids of many varieties.

Departing from Venezuela, the visitors carried many impressions of a good neighbor from whose historic background of art and culture there is much that is inspiring and whose present preoccupation in a humanitarian program furnishes lessons from which we may profit. There is convincing evidence everywhere of an earnest desire for closer relations between North and South America. If there could be found as many North Americans speaking the Spanish language as there are South Americans speaking English, a serious barrier would have been removed. Visits such as this may not show an immediate and measurable result, but often repeated, they will greatly help in creating that hemispheric solidarity which means so much to all peoples on both sides of the equator.

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DEMAND FOR DOCTORS

Now that the Charity Hospital has been straightened out, it will be possible for that institution to aid directly and indirectly in supplying physicians for the various services for which they are needed so badly. Directly the hospital is training a large number of interns and residents. Indirectly through the facilities of this institution the two Louisiana medical schools, that of Louisiana State University and Tulane, are training in their clinical years a larger group of students than has been their cus-

tom in the past, this because of the demand for physicians. At the request of the armed forces and of Procurement and Assignment Service of the social security division of the Government, medical schools have accelerated their courses and have accepted 10 per cent more students than is their custom.

As has been accentuated in the past, Washington authorities are particularly anxious to have this yearly accretion to the medical services of the Army and Navy for war purposes. In order to train these men it is necessary to have teachers. Indicative of the feeling that the maintenance of an adequate faculty in a medical school is a necessary service to the country is a recent editorial in the Journal of the American Medical Association in which it is written that "Medical teachers who are essential to the conduct of the medical school must appreciate their responsibility to continue in their teaching positions. Furthermore, they should realize that by so doing they are making a great contribution to the war effort in the education of this unprecedented number of physicians, which is necessary to the continued conduct of the war. In many instances they will be called on to carry a much heavier routine and to make greater sacrifices as teachers than they would as commissioned officers in the military services. Enthusiasm for service, local attitudes and social pressure have already resulted in serious depletion of the medical school faculties in a few instances." Particularly to be noted is the last sentence of this paragraph because much pressure has been brought on many of the younger men who have been detained in the medical schools as teachers or who are residents in a hospital and who have been deemed "essential" to get these young men to go into the armed services. There are but a few of them and their duty lies at home rather than in combat work.

Every practicing physician realizes that there is and will be a great demand for doctors in civil communities. It has been estimated that the minimum should be one physician for every 1500 civilians but these

figures cannot be accepted as final. It is obvious in a thickly settled community fewer doctors can take care of many more people than is possible in the rural communities. Unlike the cities of the far South, the urban physicians in the North have not responded as they should to the call of duty. New York City, with over 16,000 physicians, is reported to have sent only slightly over 1000 doctors into the Army. The Army needs these men although there are some people who question the actual need of six and a half to ten doctors to every 1000 men. If those who know and who are considered as authority on the subject feel that that is the number of doctors who should be in the armed forces no complaint should be made. After all we are in war and a very real war. Since Pearl Harbor nearly 5000 American soldiers have died, over 3000 have been wounded and more than 36,000 are prisoners, missing or killed in action without definite knowledge that this is the case. These figures seem large but during the same period of time 30,000 American workers have died an accidental death and 2,225,000 have had minor to severe injuries in industry. There is need to accelerate the program for medical services to industry. The armed services, medical education and hospital services may have been provided for to a certain extent at least, by Procurement and Assignment but war industries are calling for physicians and make claim for services of many more doctors than they have now, basing their demands on the figures just quoted. It is obvious that civilian service, war service, industrial service and educational service are not going to be provided with the number of doctors that each service feels it should have. But they may feel assured that the medical profession will do its very best and try to spread itself as wisely and as widely as possible and to do its best.

PREVENTIVE MEDICINE

The medical profession is proud of what has been accomplished in the last comparatively few decades in the control of sick-

ness and disease and in the prolongation of life that has resulted because of certain measures of what may be termed a prophylactic nature. It should not be overlooked that preventive medicine is important chiefly in the early years of life and that the mortality rates of people who have attained the age of 40 show very little improvement or diminution. While the physician points with pride to these accomplishments, it must not be forgotten that busy practitioners are by no means always practicing preventive medicine. As a matter of fact, often they are rather lax in their efforts to prevent disease. Some ten years ago the professor of medicine at Vanderbilt University urged that the private practitioner throw greater effort into the curbing of syphilis or otherwise the problem would have to be taken up by the Government, and it has been.

The average medical man depends on his state or local health departments to maintain a continuous supply of pure water, of clean milk and of pure food. He expects the state agencies to take care of communicable disease problems, in fact to such an extent does he depend upon them that often he fails to report one or another of the reportable diseases that occur in his practice. The practitioner frequently permits semi-lay organizations to conduct campaigns against tuberculosis, against cancer or against poliomyelitis. Maternal mortality has been appallingly high in the United States and it has been only in the last ten years that maternal mortality has begun to show an outstandingly downward trend. The doctor must face the fact that the state and local public health services for maternal health through the provisions of the Social Security Act have played a most important role in this maternal mortality decline but where the doctor has gotten behind this large problem the results through the influence and action of physicians maternal mortality fell from 7.5 per 1000 to 2.4 in 1940.

These observations represent a plea to the medical profession to cooperate with their local and state health service. The

demands on the physician's time have been great and will be greater than ever in the next few years. It has not always been possible for the doctor to give his time and attention to the subject of preventive medicine but now more than any other time when thousands of physicians are in the Army and Navy every medical man has as one of his primary duties and responsibilities, irrespective of how busy he is, the helping to maintain high standards in the prevention and correction of illness and disability so that our civilian population can give a healthy, whole-hearted effort to the winning the war.

DEHYDRATION IN INFANCY

The average clinician is well aware of the fact that in many pathologic states dehydration occasions symptoms which are occasionally overlooked. Not so much at the present day does this statement hold true because glucose solution and salt solution have become almost a routine in the treatment of many conditions, notably those associated with fever. That the sick adult needs fluids is quite well recognized but many are the babies who have died as result of lack of water. There are several reasons for this, but two stand out; one being the difficulty of administering fluids to very small children and the other is their administration in quantities insufficient to meet the requirements of a very young child, which requirements are proportionately much greater than in the older child and the adult.

Stewart* points out that fluids are of prime importance not only in dehydration but also in alkalosis and in acidosis. The child who has severe vomiting loses much hydrochloric acid and consequently as result of the loss of the strong acid ions there is a compensatory increase in the plasma bicarbonate resulting in alkalosis, which condition can be diagnosed readily by appropriate laboratory studies. The clinician should be able to recognize alkalosis because of the slow and shallow respirations and

the generalized increase in muscle tonicity associated sometimes with actual tetany and convulsions. To these children Stewart recommends the intravenous injection of 10 c. c. of 10 per cent solution of calcium gluconate per kilo of body weight. Inhalations of carbon dioxide are temporarily valuable in relieving the convulsions. If carbon dioxide is not available a paper bag held over the face of the child will result in the bag being filled with carbon dioxide of relatively high content which may be breathed and rebreathed.

An infant who has prolonged severe diarrhea not only is depleted of body fluids but also of base, and acidosis develops. The acidotic child, when the acidosis is pronounced, will have deep pauseless respirations and stupor. The urine is intensely acid. To these children the author recommends the administration of 60 c. c. of dilute 1/6 molar sodium-r-lactate solution per kilo of body weight. In the premature babies, even larger amounts of the solution should be given. He recommends giving one-third to one-half of the required solution intravenously and the remainder given subcutaneously or intraperitoneally, in order to replenish the depleted source of body water and alkali and to restore glucose and liver glycogen.

Clinical dehydration expresses itself when fluid loss is equivalent to 6 per cent of body weight. A sufficient amount of fluid should be given immediately to rehydrate the infant. To a child under two years of age then 30 c. c. per pound of weight should be given immediately and at least 60 c. c. additionally during the 24 hour period. Proportionately this is one-third more than needs to be given to older children. The fluid may be given by hypodermoclysis or intraperitoneally or intravenously. The dehydrated child will absorb 30-40 c. c. per pound when the fluid is given under the skin. When given into the peritoneum it can be given more rapidly, in ten to twenty minutes and is rapidly absorbed. In early infancy the needle should be inserted through the left rectus muscle; in slightly older children, in the midline

*Stewart, Chester A.: The administration of fluids to children, Texas State J. M., 38:332, 1942.

immediately below the umbilicus. The intraperitoneal route for the administration of fluids is an excellent one with practically no contraindications. Once in a while marked distention of the abdomen or severe dyspnea, the presence of a peritonitis or adhesions would contraindicate this method of approach but except for the distention the other conditions are rare. Intravenous injections are difficult but satisfactory veins may be seen in the superficial scalp, in the intercubital fossa, in the back of the hand or even the external jugular may be used. The author advises giving not more than 6 per cent of the body weight and al-

lowing the fluid to go in at the rate of 5-10 c. c. per minute. He cautions against trans-fusing by way of the superior sagittal sinus.

Many an adult and many a child has died a chemical death. These deaths for the most part can be obviated and prevented by the administration of water, probably the most important curative substance known to the medical profession. A well known clinician is reported to have said that if he were to have only one medicament to be employed in the treatment of diabetic acido-sis and coma he could select water as being the most useful.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

OCTOBER CALENDAR OF MEETINGS

- October 1. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
Baptist Hospital, Executive Meeting, 8 p. m.
- October 5. Orleans Parish Medical Society Board of Directors, 8 p. m.
- October 6. Eye, Ear, Nose and Throat Staff, 8 p. m.
- October 7. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Hutchinson Memorial Clinic Staff, 8 p. m.
Mercy Hospital Staff, 8 p. m.
- October 8. New Orleans Hospital Council.
- October 12. Scientific and Third Quarterly Executive Meeting, Orleans Parish Medical Society, 8 p. m.
- October 14. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Touro Infirmary Staff, 8 p. m.
Women's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.
- October 15. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- October 16. I. C. R. R. Hospital Staff, 12:30 p. m.
- October 19. Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.
- October 20. Charity Hospital Medical Staff, 8 p. m.

- October 21. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.
- October 22. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
DePaul Sanitarium Staff, 8 p. m.
- October 27. Baptist Hospital Staff, 8 p. m.
- October 28. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
French Hospital Staff, 8 p. m.
Catholic Physicians' Guild, 8 p. m.
- October 29. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- October 30. L. S. U. Faculty Club, 8 p. m.
New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.

NEWS ITEMS

Dr. Charles J. Bloom taught at the last session of the Southern Pediatric Seminar at Saluda, N. C.

Dr. Charles J. Bloom recently presented a paper on Immunization at a meeting of the Greenville Medical Society, Greenville, S. C.

Dr. Lucien A. LeDoux recently attended an executive meeting of the council of the Southern Medical Association in Richmond, Va.

During the past month sixteen members were placed on the military rolls. They are as follows: Vincent P. Blandino, Henry G. Butker, Joseph Cohen, Mervin E. Fatter, Attilio V. Filizola, George M. Genet, Edwin R. Guidry, W. Robyn Hardy, William H. Harris, Jr., M. M. Hattaway, Arthur Kellnor, J. Durel Landry, M. L. Stadiem, Theo. L. L. Soniat, Charles J. Wheeler and Roy O. Yeatts.

During the month of September the following physicians were elected to membership:

Active Membership—Louis J. Gehbauer, Jr.
Associate Membership—Reynold Patzer.

The membership of the Society at the present time is 658, of whom 494 are active members.

Edwin L. Zander, M. D.,
 Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

ANNUAL TULANE CLINICS DEFERRED

On account of the exigencies of war, it has been decided to discontinue, probably for the duration of the war, the annual Tulane clinic. A very large number of the personnel of Tulane Medical School faculty has gone into active service. In the catalog, the Department of Medicine, for example, has 23 members of the staff listed as being on leave and in active service in the armed forces; in the Department of Obstetrics nearly 50 per cent of the men, and in the Department of Gynecology the same holds true. Aside from the depletion of the staff, it is felt that of the Tulane graduates who have attended this yearly homecoming in the past, many are now in active service and those who are not are so submerged with work that it would be impossible for them to emerge in order to spend a week away from their practice. It is felt that all efforts should be directed toward the winning of the war, whether directly through active service, or indirectly through the large numbers of calls that are made on the men not in service to help in war activities.

SOUTHERN TUBERCULOSIS CONFERENCE

The annual conference of this organization will be held at the Peabody Hotel, Memphis, November 5-7. Appearing on the program will be Dr. Julius L. Wilson of New Orleans, who will speak on the subject of tuberculosis in war time. The only other Louisianian on the program is Rev. Frank S. Persons of Bastrop, who will participate in a symposium on volunteer workers.

UNITED STATES PUBLIC HEALTH SERVICE

Assistant Surgeons Richard A. Flebbe, Carl C. Kuehn, Andrew P. Sackett, and Bernard H. Raymond have been ordered to New Orleans for duty, the first three to report to the State Health Department of New Orleans, the latter to the Maritime Service Enrolling Station. Assistant Surgeon James M. Hundley has been relieved from duty in New Orleans and sent to California, and Past Assistant Surgeon L. L. Stokes has been ordered from New Orleans to McMinnville, Tenn.

Dr. George Mayer lectured on "Pregnancy Complicating Fibroids" at the Monroe Charity Hospital on September 14.

Dr. Nathan H. Polmer participated in the instruction seminar of the American Congress of Physical Therapy, held at Pittsburgh, September 9-12.

Dr. Polmer was reappointed on the Board of the American Registry of Physical Therapy Technicians for a term of seven years.

MEDICAL LIBRARY ASSOCIATION

The Medical Library Association held its forty-fourth annual meeting in New Orleans, La. Headquarters were at the Jung Hotel and the sessions met in the Auditorium of the New Hutchinson Memorial, Tulane University of Louisiana School of Medicine. Officers elected for the coming year are: Mary Louise Marshall (Tulane University),

President; Dr. John F. Fulton (Yale University), Vice-President; Frida Pliefke (Mayo Clinic), Secretary; and Bertha B. Hallam (University of Oregon), Treasurer. The Program featured a Symposium on Tropical Medicine, Medicine in the South, and the Medical Library in the War Program. Selection of the place for the 1943 meeting has not yet been made.

AMERICAN BOARD OF OPHTHALMOLOGY

Because of the War Emergency, the Board announces the following additional examinations:

New York City—December 13-16.

Los Angeles—January 15-16.

OFFICE OF CIVILIAN DEFENSE

Washington, D. C.

To: Regional Medical Officers.

From: Chief Medical Officer.

Subject Conservation of dealers' stocks of medical and surgical supplies:

The following statement should be forwarded to State Chiefs of Emergency Medical Service with a request that they transmit it to local chiefs of Emergency Medical Service and to hospitals and State and local Medical Societies:

The medical profession and the hospitals of the nation will shortly be obliged to depend upon dealers' stocks of medical and hospital supplies if they are to maintain their present level of efficiency. The continued shortage of raw materials makes it increasingly evident that even the armed forces may have difficulty in securing their requirements. Stocks on the shelves of the dealers of this nation constitute the only reserve of medical and hospital equipment which may be available in the near future to meet civilian needs. The hoarding and dead storage of equipment and supplies for a possible emergency should, therefore, be discouraged. Any unexpected emergency could be met by our present civilian medical and hospital resources; continued disaster could only be met by the utilization of military stores which would be made available if there were urgent need.

Any surplus or obsolete equipment now in the possession of physicians and hospitals ought not to be dispersed at this time, because of the difficulty of replacement and the possibility that it may be needed for the establishment of emergency base hospitals.

PEPTIC ULCER FILM AVAILABLE

There is now available for free showings before groups of physicians the first complete movie film on peptic ulcer, in color and with sound track.

The film is entitled "Peptic Ulcer" and was produced under the direction of the Department of Gastroenterology of the Lahey Clinic of Boston. The American College of Surgeons has awarded its seal of approval to the film.

Running time of the film is 45 minutes, 1600 feet of 16 mm. film, and covers a presentation of the following problems of peptic ulcer: Pathogenesis, diagnosis, treatment, pathology, complications, including obstruction, hemorrhage, and perforation, gastric ulcer, surgery and jejunal ulcer.

Arrangements for a showing of the film may be made by writing to the Professional Service Department of John Wyeth and Brother, Inc., Philadelphia, who will provide projection equipment, screen, film, and operator for medical groups, without charge.

CINCHONA AND CINCHONA ALKALOIDS FOR THE TREATMENT OF MALARIA

We are now in receipt of a report from the National Research Council in which it states that a preparation of one or more of the crystallizable cinchona alkaloids (quinine, quinidine, cinchonine, cinchonidine) for the treatment of malaria should provide daily for 7 consecutive days, for adults, at least 20 grains of the alkaloid or alkaloids.

The minimum amounts of these alkaloids which should be provided daily for the same period for children are as follows:

Age	Grains
Under 1 year.....	2½
1 to 2 years.....	5
3 to 4 years.....	7½
5 to 6 years.....	10
7 to 8 years.....	12½
9 to 10 years.....	15
11 to 12 years.....	17½
13 years and over.....	20

It is the understanding of this Administration that the reference to "Cinchona Alkaloids" includes the commonly used salts of these alkaloids.

The Council states that in making this recommendation it recognized that 20 grains of the cinchona alkaloids a day do not provide the optimum dose for adults—which should be 30 grains—but that the minimum of 20 grains is specified as a compromise to provide for an effective dose and to conserve the stocks of these alkaloids during the war period.

The Council has expressed the opinion also that the cinchona alkaloids are not effective in the prophylaxis of malaria.

In its enforcement program the Food and Drug Administration will be guided by this authoritative expression of opinion and will regard as misbranded preparations of cinchona alkaloids offered for the treatment of malaria which, when consumed in accordance with the directions in their labelings, provide less than the dosage specified above.

The Administration heretofore has expressed the opinion—and takes this occasion to emphasize it—that directions for use, to be adequate, should include instructions to repeat the treatment if a relapse occurs.

It has been noted that cinchona alkaloids and preparations of them are sometimes marketed in packages which do not contain amounts of the active principles sufficient to constitute a complete treatment in accordance with the above-mentioned schedule. Consideration should be given to the possibility of deception, in violation of the Federal Food, Drug, and Cosmetic Act, resulting from the sale of a package labeled to indicate that it contains a treatment for malaria, if the amount of medication supplied in the package is insufficient for that purpose.

Some preparations of the cinchona alkaloids offered as malaria medicines contain active amounts of cathartic drugs. There appears to be no rational basis for such a combination. Some patients suffering with malaria may not need a cathartic. Those who may need such additional medication should base the dosage upon the need for it; in other words, the amount of the cathartic administered should not depend upon the need for cinchona alkaloids. There is no objection to advising purchasers to use some suitable cathartic drug in connection with the malaria treatment if constipation occurs.

W. G. Campbell,
Commissioner of Food and Drugs.

ANTHELMINTICS FOR DOGS

The Food and Drug Administration has received over a period of years numerous complaints of deaths of animals, particularly dogs, allegedly due to the administration of anthelmintics.

Anthelmintics, in order to be effective, must be given in doses which cannot be considered free from harm. In some cases they may actually be the primary cause of the death of the animals to which they are administered. More frequently perhaps they aggravate the disease condition already existing, thereby hastening death.

It is a matter of common knowledge that owners of animals, especially owners of pets, have within recent years become "worm-conscious" and have sometimes reached the erroneous conclusion that most ailments of pets as well as other animals are associated with or directly due to worm infestation. This has led to the extensive use of anthelmintics where they were not indicated.

This Administration has had extensive correspondence with manufacturers of anthelmintics in which it has pointed out that effective doses of anthelmintics cannot be administered safely to animals under all conditions. The Federal Food, Drug, and Cosmetic Act requires that drugs be labeled with adequate directions for use and adequate warnings against misuse. It defines as misbranded drugs which are dangerous to health when used in accordance with the directions provided in the labeling. To avoid conflict with the requirements of the Act these provisions should be given careful consideration. Some such information as

the following, conspicuously displayed in connection with the directions for use of anthelmintics, would be in the user's interest and would contribute toward compliance with the requirements of the law:

"Warning: All known effective anthelmintics (worm remedies) are more or less toxic to animals. This preparation should not be administered to sick, feverish, physically weak, or undernourished animals unless on the advice of a veterinarian."

W. G. Campbell,
Commissioner of Food and Drugs.

PUBLIC HEALTH PHYSICIAN I

The Merit System supervisor, Mr. Jack H. Foster, has issued information to those who wish to apply to take the examinations for public health physicians. The information as to Grade I physician is reprinted below. The higher grade appointments information may be obtained from the Merit System supervisor in Baton Rouge or from the State Department of Health in the Civil Courts Building, New Orleans.

Kind of work: Professional medical work in administering a generalized public health program in an assigned area, including clinic activities in venereal disease control, and maternal and child health; and related work as required.

Distinguishing features of work: Work involves responsibility for planning and executing a generalized public health program in a parish of small or moderate size with responsibility for adapting the state health policies and procedures to meet local situations, and for planning and executing according to local needs specialized programs in maternal and child health and communicable disease control. Duties entail coordinating the activities of the parish health unit with the activities of other agencies engaged in protecting and promoting public health. Supervision is received from public health physicians of higher grade in broad outline. Supervision is normally exercised over a small group of public health nurses, sanitation inspectors, clerical personnel, and in some cases part-time clinic physicians.

Examples of work: (Note: These examples are intended only as illustrations of the various types of work performed in positions allocated to this class). Plans and executes a generalized public health program, including clinic activities, in an assigned area. Plans and executes in accordance with local needs, specialized programs in maternal and child health, including maternity clinics, infant, pre-school, and school examinations; in venereal disease control, including clinics for administering drugs; programs for the control of infectious and contagious diseases, including immunizations against smallpox, typhoid fever, diphtheria and other diseases. Investigates suspicious contagious and infectious diseases in cooperation

with the medical profession. Plans and supervises the execution of programs designed to improve the environmental sanitation of the community. Studies the living conditions of the community in their relation to health and sets up machinery for the protection of the community health. Serves as general executive officer of the parish health unit, and as agent of the state health department in securing appropriations from local bodies for the operation of the health unit. Investigates violation of public health laws and institutes legal proceedings where necessary. Gives lectures and writes papers of a promotional and educational nature for the advancement of public health.

Necessary knowledges, skills, and abilities (At time of appointment): Good knowledge of the principles and practices of general medicine and surgery as related to public health, and of the methods, techniques, and objectives of preventive medicine. Knowledge of public health laws and regulations and of available public health facilities. Skill in making differential diagnoses, particularly in communicable diseases, and in determining the need for and instituting precautionary control measures, as isolation, immunization, and clinical care and treatment. Ability to execute a generalized public health program adopted to local needs. Ability to advise professional persons, local officials, and patients as to the requirements and procedures involved in public health programs. Ability to gain support and co-operation in the conduct and development of the public health program. Ability to speak effectively on public health subjects before lay and professional groups.

Required preparation for work (Federal minimum requirements): Graduation from a medical school of recognized standing, and completion of an approved one-year rotating internship, preferably supplemented by related clinic or graduate work in public health.

Necessary special qualifications: Eligibility for licensing to practice medicine in the State of Louisiana.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Section of Epidemiology of the Louisiana State Board of Health shows that for the week ending August 15 as usual syphilis led all other reportable diseases with 454 instances, followed by 92 of gonorrhea, 21 of pulmonary tuberculosis, and 20 of malaria. This particular week is really an outstanding week from the health point of view, in so much as there were only four diseases reported in numbers greater than 10. Of the unusual diseases a case of poliomyelitis was reported from East Baton Rouge Parish and one from Washington Parish. There were four cases of typhus fever listed, three from Vermilion and one from Jefferson Parish.

One case of undulant fever was reported. For the succeeding week again the health report was remarkable. Had it not been for the 429 cases of syphilis, 44 of gonorrhea, 32 of pulmonary tuberculosis, and the 19 of malaria plus 12 of typhoid fever, the record would almost be comparable to that of the previous week. Three cases of poliomyelitis were listed in this particular week, one each from Calcasieu, Cameron, and Winn Parishes. The typhoid fever cases were scattered throughout the state, Winn with three, Iberia with two being the only parishes with more than one case. Four cases of typhus fever were found this week as well. August certainly was a very healthy month. Except for the three venereal infections, syphilis with 290 cases, gonorrhea with 181, and chancroid with 23, pulmonary tuberculosis with 27 cases was the only other reportable disease occurring in numbers greater than 10 during the week of August 29. Sporadic cases of poliomyelitis were still appearing this week, Calcasieu and Livingston each reporting one case. Ouachita reported three cases of typhoid fever, and three other parishes one each. Forty-six cases of syphilis, 157 of gonorrhea, 21 of chancroid were reported from army camps. The first week in September, which statistically closed September 5, maintained the high remarkable record of August. Only three diseases were reported from the state in numbers greater than 10, and two of these were venereal diseases, syphilis with 296 and gonorrhea with 61. The 34 cases of pulmonary tuberculosis was the only other disease of any moment numerically. Five parishes reported patients with typhoid fever, and Vermilion had two cases of typhus fever, while Livingston Parish reported five of malaria.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week ending August 15, there were 46 more deaths reported in the City of New Orleans than the previous week which was, however, quite unusual. For this week there were 138 people who died in the city, 86 of whom were white and 52 negro. Only five of the deaths were in infants under one year of age. The 124 deaths that occurred in the week which ended August 22 were divided 77 white and 47 negro, with 18 infant deaths divided 10 negro and eight white infants. For the week ending August 29, there were reported 114 deaths in the city, 68 white, 46 negro, with nine infant deaths, two-thirds of which were in white children. The death rate for New Orleans is surprisingly low, and that despite the fact that there has been a considerable increase in the population of this city in the last year. The three year average for the corresponding week in August was 155 deaths. There were 418 fewer deaths in the city this year than last year, which incidentally was a very healthy year.

BOOK REVIEWS

Boletín del Instituto de Medicina Experimental: (For the Study and Treatment of Cancer). University of Buenos Aires. Director: Professor Angel H. Roffo. Vol. XVIII, No. 58, Dec. 1941, pp. 923-1317.

This encyclopedic volume of over 400 pages copiously illustrated, issued periodically by the Institute for Cancer Research and Treatment, of Buenos Aires, is in itself a monument to the unrivalled capacity and research and tireless industry of Dr. A. H. Roffo, the organizing genius who founded and has presided over this world famous institute for the last eighteen years. This number commemorates the admission of the hundred thousandth patient to the Institute since its foundation in 1923. These patients were given approximately 900,000 consultations, 500,000 radium, x-ray and electro-surgical treatment; in all about 1,400,000 patients attended in the hospital and dispensaries up to 1942.

The Institute which began in a small building, in 1923, has gradually evolved into a great hospital plant, including twelve tall buildings in which are housed the chemical, physical and biological laboratories, thoroughly equipped for experimental work with a large staff of experts in attendance. Drs. A. H. and A. E. Roffo (Jr.) and their assistants are the prolific authors of the many scientific studies that appear periodically in this review. In this issue they take up cholesterol in all its chemical, physical and biological relations with cancer; other articles deal with violet rays, x-rays and radium therapy, while the electro-surgical extirpation of laryngeal and rectal cancer are made the subject of special and full reports (296 laryngectomies for cancer from 1927 to 1930; 261 electro-surgical extirpations of the rectum by the perineo-pelvic route with 2 per cent operative mortality and 50 per cent five year cures).

The bibliography, abstracts and reviews of the latest cancer literature, make this publication valuable for reference. Quite apart from the purely scientific and technical features of this publication, a large space is devoted to the new training school for nurses, with special application to cancer therapy in all its polymorphous aspects. The details of this unique course are given in a well illustrated series of lectures by Prof. Roffo and staff. In this connection, also, the addresses delivered at the opening of the school and at the inauguration of other branches of the Institute in the Argentine, are profitable reading for all those who may be called upon to interpret the scientific and social problems of cancer in a lucid and impressive way to untrained lay audiences. After reading this remarkable document it is not surprising that a visit to the Roffo Institute at Buenos Aires has become an almost obligate function of

every medical visitor to the great metropolis of the Argentine Republic.

RUDOLPH MATAS, M. D.

Boletino del Instituto de Clinica Quirurgica: Universidad de Buenos Aires: Director, R. C. Ferrari, M. D. Año XVIII, Enero-Abril, 1942. No. 144.

This number of the Bulletin is of special interest to all surgeons who have kept in touch with the brilliant work of the surgical institute which Professor Arce founded as a department of the University of Buenos Aires twenty years ago and has since directed with great credit to himself, to surgery and to his country. Dr. Arce is not only the Dean of Surgeons in the Argentine Republic and an outstanding international figure in virtue of his own epochal contributions to the advancement of surgery, but is the father of a school which had added no little to the fame of Argentine surgery.

This number of the Bulletin marks the date of the voluntary retirement of Professor Arce from the actual directorate of the Institute and the transfer of his title and authority to Professor Ivanissevich, his chief assistant since the foundation—and an eminent surgeon and teacher in his own right.

The formal transfer of the Directorate and head professorship of the Institute, which took place on April 23, 1942, was characterized by all the distinction of an academic function in which Dr. Arce recited the history and achievements of his successor and pupil, Dr. Ivanissevich spoke in eulogy of the master,—the speeches on both sides all aglow with the fervor, grace and eloquence that is so distinctive of Spanish oratory. Quite apart from these personal eulogies, Dr. Ivanissevich's inaugural lecture as head of the Institute was a dissertation of fine literary quality in which the seeming paradox of a constantly increasing perfection and efficiency in the technics of surgery contrasted with steadily decreasing indications and restrictions of its operative field and mutilating interventions. Contrary to the general belief, it would indeed seem that medicine is now gradually regaining its lost prestige by the great advances of preventive medicine, the extinction of many surgical diseases, besides a more effective systemic and pharmacologic therapy.

At this moment a great wave of enthusiasm in the study of the Spanish language and culture is sweeping the country in response to a call for a closer Pan-American cooperation and solidarity in the presence of a common peril. It would seem profitable for medical readers to subscribe to the publications of the high character of this and the Bulletin of the Roffo Institute, previously described, not only for their great professional and

technical value but for the sake of the fine lessons in correct and elegant academic medical Spanish that they inculcate.

RUDOLPH MATAS, M. D.

A Bibliography of Aviation Medicine: By Ebbe Curtis Hoff and John Farquhar Fulton. Springfield, Ill., Charles C. Thomas, 1942. Pp. 237. Price \$4.00.

It is seldom that the two requisites of excellence in content and fulfillment of urgent need, are satisfied so completely as in this Bibliography of Aviation Medicine. Dealing with a field new to most physicians and research workers alike, it should find a place in medical and technical libraries, and should be a part of the armamentarium of every physician assigned to aviation service.

The bibliography has been compiled for the Committee on Aviation Medicine, Division of Medical Sciences of the National Research Council, acting for the Committee on Medical Research of the Office of Scientific Research, Washington, D. C. Arrangement is by subject: History and General Aspects of Aviation Medicine, Special Physiology of Aviation and Conditions Simulating Flight; Special Pharmacology of Aviation and Conditions Simulating Flight; Special Psychology of Aviation and Conditions Simulating Flight; Aeromicrobiology; Diseases and Accidents in Aviation and Conditions Simulating Flight; Selection and Assessment of Efficiency of Flight Personnel; Training, Performance and Fatigue of Flight Personnel; Protection of Flight Personnel; Aviation and Public Health; Organization of Aviation Medicine; Special Problems, and General Studies in Aviation Medicine. The subject lists are cross-indexed by author to numbered references and an alphabetical index to subject refers to page.

More than 5,700 references are included from some 800 periodical files, as well as textbooks, monographs and systems. References are included to May, 1942. The reader is even advised to address Dr. Fulton for information as to the libraries in which the more unusual material may be found.

The volume is Number 5 of the Publications of the Historical Library of the Yale Medical Library. Reasonably priced and pleasing in format, it amply fills an urgent need in the field of military medicine, and may well set a pattern for other bibliographies on related subjects.

MARY LOUISE MARSHALL.

Carcinoma and Other Malignant Lesions of the Stomach: By Waltman Walters, B. S., M. D., M. S. in Surgery, D. Sc., F. A. C. S., Howard K. Gray, B. S., M. D., M. S. in Surgery, F. A. C. S. and James T. Priestley, B. A., M. D., M. S. in Experimental Surgery, Ph. D. in Surgery, F. A.

C. S. Philadelphia, W. B. Saunders Company, 1942. Pp. 576. Price \$8.50.

The reviewer has enjoyed reading this well edited contribution from the Mayo Clinic. The three principal authors, Walters, Gray and Priestley, with sixteen associates, have produced a magnificently illustrated investigation of gastric malignancy.

While the volume is credited with 576 pages, some 48 of these, introducing chapters, are either empty of or carry little printing. There is certainly no conservation of paper. In several instances a contributor has extended himself to lengths following textbook presentation; others have been too abbreviated. Individually, therefore, there is rightful criticism in one instance and praise in another.

Alvarez interestingly covers the historical aspects from Hippocrates' prognostic statements on black vomitus through Billroth's accomplishment on resections to a diagnostic evaluation of gastroscopy.

Morlock and Hartman rightfully emphasize the need for and accomplishment by cooperation of clinician, roentgenologist, gastroscopist, surgical pathologist and gastric surgeon. This is an ideal seldom attainable. The inconsistency of the usual criteria for benignancy is interestingly presented with the summarization that only the histologic pathologist can give a definite answer in each instance and that he alone should pass final judgment in the suspicious case.

Kirklín roentgenologically surveys the issue and emphasizes the importance of capable mucosal delineation. His statements on resectability, as determined by x-ray, are interesting and revealing.

Moersch presents briefly and perhaps inadequately the position of gastroscopy. He is not as enthusiastic over gastroscopy as one might expect. He gives interesting observations on the differential diagnosis by direct visualization. I am surprised that there is no little mention of post-resection observations. His section includes gastrophotography, but there is no mention of this interesting if unsatisfactory procedure.

Eusterman elaborates on laboratory procedures and their relation to the progress of the disease. His observations, resulting from his extensive experience, are interesting, conclusive and summarize thoroughly the present day knowledge on the subject.

An unquestionably important and definitely neglected subject, the physiologic consequences of gastric carcinoma and of gastrectomy, is covered by Snell. It is disappointing that he does not also include the mechanical complications that often result in extremely disturbing symptoms in many of the gastrectomized patients we have seen.

The section on "Indications for Treatment" leaves a single valuable conclusion: Surgery alone

should determine the inoperability unless there are demonstrable metastases. I feel some mention of peritoneoscopy, completely omitted, was indicated in this section for demonstration of hepatic metastases by peritoneoscopy in instances otherwise considered operable has been our experience.

Broder classically handles the pathologic considerations as does McCarty the surgical pathology. There is instructive correlation of prognosis as related to degree of malignancy as expressed by Broder's classification. One is astonished to find 60 per cent of persons from whom a carcinoma graded 1 or 2 had been removed achieve a "five year cure" while only 21 per cent of those graded 4 are found alive after such a period.

Listed under special diagnostic problems, and worthy of emphasis, is the consideration given the great distortion associated with perforating growths of the upper stomach when producing fixation to the pancreas. An interesting case report on the value of deep therapy in lymphosarcoma of the stomach emphasizes the indication for exploratory and biopsy in apparently inoperable instances.

The preoperative management of the patient deserves the attention it is given. Unquestionable proper preoperative care is greatly responsible for the improved statistics. Some mention should have been given to detailed therapeutic control of the inflammatory status of the lesion; many a neoplasia is insignificant in size when contrasted with the extensive associated gastritis which unquestionably increases the operative hazard. There is no mention of the time honored use of dilute hydrochloric acid lavages preoperatively.

Rivers presents an interesting chapter on fluid balance without entering the mystic realms of physiological chemistry. The vitamins are covered without undue enthusiasm.

Technic in the operating room is only of academic interest to the average reader, but has been covered in such a manner that it might well serve as an operating room reference.

With regard to anesthesia, it seems Adams has not recognized sufficiently the value of spinal anesthesia. He seems biased toward inhalation gases. The use of intravenous barbiturates is lauded for its adjunctive value.

The fifteenth through the nineteenth chapters, covering 108 pages, is a thorough presentation on all the aspects of gastric surgery as applicable to malignancy. This section represents a beautifully illustrated condensation of surgery and surgical judgment.

In the postoperative management there are many important aspects too often forgotten. The operating room corps frequently expose the patient unnecessarily in removing drapes, leaving a partially exhausted patient practically unclad in an air-conditioned room. The position of supportive fluids and vitamins, the use of continuous suction, the

immediate complications, all are considered in a manner illustrative of why the surgical accomplishments of the Mayo Clinic are so astounding.

Desjardins gives 20 pages of condensed readable evaluation of palliative and supplemental roentgenologic therapy.

The statistical study is remarkable; 10,890 cases of carcinoma of the stomach seen at the Mayo Clinic in the years from 1907 to 1938 are broken down in a detailed survey. Tabulation of survivals adjusted for normal death rate of persons past middle age reveals a brighter outlook for the resectionist. The outstanding conclusion is that gastric malignancy is not as hopeless as commonly believed by most physicians. If this is well accepted and earlier surgery is offered more frequently, there will be an increase in operability and thereby curability.

On the whole, even the most critical reviewer must admit this a remarkable publication only achievable by a cooperative organization like the Mayo Clinic. This volume will be instructive reading to the accomplished specialist as well as to the general practitioner. In addition, the student and statistician will find this an unparalleled reference.

GORDON MCHARDY, M. D.

Surgery of the Ambulatory Patient: By L. Kraeer Ferguson. Philadelphia, J. B. Lippincott Company, 1942. Pp. 923, illus. Price \$10.00.

The experienced surgeon is recalcitrant at the thought of distinguishing between "major" and "minor" surgery. He has learned by bitter experience that such a distinction is unsatisfactory, and the classification is influenced by too many variable factors. What are commonly known as "minor" surgical procedures can and frequently do become "major." Depending upon the skill, training, and experience of the surgeon the same procedure may be considered "minor" for one and "major" for another. On the other hand, it cannot be denied that there are a group of surgical conditions and procedures that are associated with considerably less risk and hospitalization than others. By using the title "*Surgery of the Ambulatory Patient*," the author of this book has neatly and intelligently avoided this controversy and permitted a rational classification.

The book is divided into three parts. The first is devoted to surgical principles and lesions in which necessary paraphernalia, appropriate anesthesia and dressings and bandages are described, and the character and treatment of specific lesions discussed. The second part deals with regional injuries, surgical lesions and applicable therapeutic methods. The third part is concerned with the treatment of fractures and dislocations in the ambulatory patient.

The subject material is comprehensively considered and skillfully arranged. The descriptive text

which is written in a lucid, readable style incorporates current concepts. Following each chapter there is a list of references which in general are fairly representative. In this connection, references to scalenus anticus syndrome are conspicuously absent and especially the diagnostic procedure, originally suggested by Gage, of novocain injection of the scalenus anticus muscle which is even illustrated. A more serious criticism, however, is the fact that some surgical conditions and procedures are presented which even in the hands of well-trained and skillful surgeons would be better considered "non-ambulatory." Thus, the excision of a thyroglossal cyst or sinus is described and illustrated as a procedure which may be performed "in ambulatory patients." Other even more extensive procedures are included and whereas in Ferguson's expert hands they may be safely considered in this category it is doubtful whether they should be presented as such in a text for general use. These considerations restore the previous dilemma of distinguishing between "major" and "minor" surgery, clearly exemplifying the reluctance of experienced surgeons to employ such terms.

Aside from these criticisms, however, the book is a valuable, authoritative and instructive presentation. The profuse but well selected illustrations consisting of photographs and simple line drawings are well reproduced and clearly informative.

MICHAEL DEBAKEY, M. D.

Urology In War: Wounds and Other Emergencies of the Genito-urinary Organs, Surgical and Medical: By Charles Young Bidgood, Lt. Commander (M. C.) U. S. N. R. Baltimore, Williams and Williams Co., 1942. Pp. 78. Price \$2.00.

The foreword, as expressed by Ross T. McIntire, Surgeon General, U. S. Navy, relates in a very terse manner the value of this manual to those not specialists in urology. I might add to those who have had no experience in emergency surgery, as many of the conditions considered are encountered by the emergency surgeon in civil life due to compensation accidents, automobile accidents, brawls and other accidents.

Chapter three deals with Inflammatory Lesions of the Genito-Urinary Tract in a most concise manner, although no mention is made of the chloride or gluconate of calcium in the treatment of acute epididymitis. The colon bacillus group is occasionally encountered in perinephritic abscesses.

Anesthesia is given due consideration as to choice, preparation of the patient, indications and contraindications of the different types with their limitations and the antidotes for the toxic effects.

MONROE WOLF, M. D.

Eye Manifestations of Internal Diseases: By I. S. Tassman, M. D. St. Louis, C. V. Mosby Co., 1942. Pp. 542. Price \$9.50.

This complete, well-arranged and up-to-date reference book is written especially for the ophthalmologist interested in the detailed relationship of the visual mechanism to the other bodily functions. It is a compilation of the world literature as paraphrased by the author, combined with the results of his many years of personal experience. The 550 pages which are especially well illustrated are grouped into five principal sections. The first is devoted to the anatomy and pathology of the visual apparatus, the former in greater detail, and the latter in lesser detail than would be expected in a volume on this subject. The examination of the eye and the patient is presented in the second section. The chapter "Examination of the Iris" is incorrectly captioned, because it includes the entire posterior part of the eyeball. "Congenital and Hereditary Eye Manifestations" are then detailed. Unfortunately, the author does not sufficiently emphasize the fact that many hereditary eye manifestations are at birth only tendencies. These, if uncompensated, later result in pathologic conditions of numerous types.

In the fourth section, infectious diseases are presented in seven chapters, approximating 150 pages. A chapter on drug and chemical intoxicants follow. The last section of about 150 pages is devoted to diseases of the different bodily systems as they affect the eyes.

The table of contents is especially complete, useful, and well-arranged. The author is to be congratulated upon the adequate, practical and simple manner in which he has presented an important but complex ophthalmic subject.

CHARLES A. BAHN, M. D.

Morris' Human Anatomy: A Complete Systematic Treatise: Edited by J. Parsons Schaeffer, A. M., M. D., Ph. D., Sc. D. 10th Ed., Philadelphia, The Blakiston Co., 1942. Pp. 1635. Price \$12.00.

For many years the most popular textbooks of general anatomy have been those which treated the systems of the human body one by one in a rather detailed manner. True, some teachers of anatomy have found the cyclopedic scope of these texts too broad for their purposes, particularly with the recent trend to curtail curricular time in anatomy and dissection. However, briefer treatments of the subject or topographic and regional approaches have not been satisfactory to meet the needs of the student or the practitioner who desires an almost all-inclusive reference book. Such an exhaustive treatise of the structure of the human body is available in a single volume in this, the tenth edition of Morris' Human Anatomy. It undoubtedly is a thorough and complete text.

Under the new editorship of Professor J. Parsons Schaeffer, this outstanding American textbook of anatomy has been revised, in large part rewritten, amplified and brought up to current thought.

Several new contributors have replaced or joined those of the previous edition: Professor Harold Cummins of Tulane—the Skin and Mammary Gland; Professor J. C. B. Grant of Toronto—the Musculature; Professor Bradley M. Patten of Michigan—the Cardiovascular System; Professor Olaf Larsell of Oregon—the Nervous System; Dr. Raymond F. Blount of Minnesota collaborating with Professor C. M. Jackson, the former editor of the book—the Digestive System.

There are numerous new illustrations and many others have been improved and recut. Particularly noteworthy are the light hues in the coloring of muscles and bony areas of muscle attachments. The reader will note a new typography, a very readable and eye-pleasing old-faced type. The anglicized BNA terminology predominates, and recent revisions of the Jena Nomina Anatomica (INA) are added parenthetically. An exhaustive index of 118 pages facilitates finding the subject about which information is desired.

To the reviewer, leafing through the new edition of Morris' Human Anatomy is like meeting an old friend, who, overnight as it were, has prospered. Though there is a different hue to his complexion, a new turn to his gait, and a changed outlook on the world, the familiar features of the reliable friend are there, and he promises to be even more faithful than he has even been.

CHARLES MIDLO, M. D.

Health Education of the Public: By W. S. Bauer, B. S., M. D., and Thomas G. Hull, Ph. D. 2nd ed. rev. Philadelphia, W. B. Saunders Company, 1942. Pp. 315, 52 illus. Price \$2.75.

The publishers' statement, "a factual handbook for all workers in the field that will prove particularly helpful in organizing and conducting the many branches of an effective health education program," aptly describes this new edition.

The manual outlines the various technics found by experience to give satisfactory results in health education, and points out difficulties inherent in certain other methods. The chapters on health meetings, use of motion pictures, preparation of

exhibits and writing of newspaper articles, have been completely revised. A particularly good chapter is included on the use of the radio for communication of health education. Careful attention is given to the listing of full references to source material.

This book should be of value to any physician devoting even a small portion of his time to health education.

RALPH H. HEEREN, M. D.

PUBLICATIONS RECEIVED

D. Appleton-Century Company, New York: First Aid, Surgical and Medical, by Warren H. Cole, M. D., F. A. C. S. and Charles B. Puestow, B. S., M. S., M. D., Ph. D., F. A. C. S.

J. B. Lippincott Company, Philadelphia: Human Pathology, by Howard T. Karsner, M. D.

W. B. Saunders Company, Philadelphia: Clinical Anesthesia, A Manual of Clinical Anesthesiology, by John S. Lundy, B. A., M. D.

Charles C. Thomas, Springfield, Ill.: A Handbook of Allergy for Students and Practitioners, by Wyndham B. Blanton, M. A., M. D., Litt. D. Medical Progress Annual, Volume III, 1942, edited by Robert N. Nye, M. D.

Lea & Febiger, Philadelphia: Shock, Its Dynamics, Occurrence and Management, by Virgil H. Moon, A. B., M. Sc., M. D.

Interscience Publishers, Inc., New York, N. Y.: Blood Grouping Technic, by Fritz Schiff, M. D. and William C. Boyd, Ph. D. Advances in Pediatrics, Volume 1, Editor Adolph G. De Sanctis, M. D. Advances in Internal Medicine, Volume 1, Editor J. Murrery Steele, M. D.

Mack Printing Company, Easton, Pa.: The Pharmacopoeia of the United States of America, Twelfth Revision, prepared by the Committee of Revision and Published by the Board of Trustees, official from November 1, 1942.

The C. V. Mosby Company, St. Louis: Synopsis of Pathology, by W. A. Anderson, M. A., M. D. Traumatic Surgery of the Jaws, including First-Aid Treatment, by Kurt H. Thoma, D. M. D.



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THE X-RAY CONSULTATION*

T. I. ST. MARTIN, M. D.
HOUMA, LA.

In the few minutes allotted me I shall speak, not from the point of view of the city doctor referring the case to the roentgenologist, but from the point of view of the country practitioner seeking assistance in the diagnosis of his case.

In our own way, we men in the country, without the resources of our fortunate urban confrères, battle our way through in our fight with life and death. Often the days are too short to devote the time to some of the simple laboratory procedures that would put us on the right track to establish a rational working diagnosis. It is to this group of men I am speaking. For in the country, truly the roentgenologist is a consultant.

But sometimes it is hard work to assist in establishing a diagnosis in a patient who is referred, simply with the request, for "x-ray examination," without a working diagnosis. This is not meant as a reproach to my fellow confrère in the country, but an appeal to him to spend a precious moment or two examining his patient. A bit of palpation may disclose the fact that there is a mass in the abdomen, or glands in a certain region. The prick of a needle and a hemoglobin scale may establish the fact that there is an anemia. A simple test consuming just a few moments may bring out the fact that there is occult blood in a stool, and direct attention to a bleeding lesion somewhere in the intestinal tract. A morning, noon, and evening temperature chart

may cause a more than passing scrutiny of the patient's chest. Routine urinary examination will often establish a working diagnosis.

It may be well to stress what can be expected of an x-ray examination. An x-ray film does not usually lie, though it may at times, because of some accident, and an "artefact" is present. But when the same unexplainable shadow presents itself repeatedly, it is not an artefact.

In referring a patient to the x-ray laboratory, remember you seek a consultation over the shadows or filling defects cast by gross pathology on the x-ray film. You are not seeking a report of microscopic structures and findings. Imagine yourself inspecting a patient's back. You see and feel a tumor which you know from past experience to be a lipoma. You aspirate a fluid; it seems to be serous, or it may seem to be purulent. At any rate it has worked out that way in the past. The microscope only will give a definite answer. Conceive then of the roentgenologist as a doctor who has made a study of the shadows cast by gross pathology on the x-ray film. Then hold your consultation. Do not look for magic. You will get it sometimes, but that is far from the rule.

In our present-day search for the ultimate in x-rays, with the laminograph, taking as many as ten layers to the inch, finer and finer focal spots, one might wonder how a diagnosis was made with the equipment obtainable in the old days. In intestinal work we depended on fluoroscopy. Most of us were not able to take films of stomachs on heavy subjects with diaphragms and grids in a tenth or a fifth of

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 28, 1942.

a second as we do today. None the less many an interesting diagnosis was made.

In view of the fact that the intention expressed when I was invited to read this paper was that it should be given from the point of view of the rural physician, rather than the city roentgenologist, the cases presented will be a hodge-podge, with the object in view of suggesting what can be done in the rural x-ray consultation. In some of the spinal injuries, the roentgenologist and the orthopedist may both feel that the cases presented, and the method of presenting them are elementary. The cases themselves are not out of the ordinary. The intention is to bring out the fact that one could be brought out best in one position and another in another position, and the plea is for a more complete examination than the routine antero-posterior and lateral views in suspected spinal injuries, especially in heavy subjects.

With much of the equipment still in use over the country, it is not unusual to spend as long as 30 to 45 seconds to get a film in the lateral view of the lumbar spine in heavy subjects, and in that length of time there is likely to be motion, or so much secondary radiation that all detail is lost, and nothing but a compression fracture can be brought out—if it is brought out at all at the first examination. Most of our trouble is in heavy subjects—it is these great big clumsy fellows who are breaking their backs while standing on their feet—and they make up the great number of back injuries we are called upon to treat in industry.

The routine antero-posterior and lateral films that constitute the usual examination should not be looked upon as the complete examination in all cases. Anything unusual should be re-checked with both obliques and even stereoscopic views. I wonder, if all of these views were taken at the first examination, if we would continue supposing that a fracture that could not be brought out at the time of the injury would be easier to detect at a later date, after the damage to the vertebra has made the injury so evident.

The referring physician feels that an an-

tero-posterior and a lateral view should be sufficient, and cannot see why the patient should pay for more films, and the roentgenologist cannot take more films at his own expense and survive. There is this angle too. Some men have a wonderful gift of sight, and when an x-ray film is placed before them in a viewing box can see things that another man would require obliques and stereoscopic films besides. But all of us are not gifted with such eyes, and we make up the rank and file of roentgenologists to whom you are bound to turn. Not so long ago, at a meeting of one of the big x-ray societies, I heard a prominent man condemn certain stereoscopic films. He said one saw too much in stereoscopic films. To refute that statement, one has only to read leading textbooks and journals and see what equally prominent men have to say on the other side of the argument. If it takes seven different films of a given vertebra to clear up a doubt, it certainly will be less expensive to clear up that doubt then and there, rather than have repeated examinations in the course of time, at a much greater expense and with a great deal more suffering, all still at the expense of the patient. That may be called floundering, this taking of so many films in different positions, but who among us does not catch himself floundering, day in and day out, in stumbling upon a correct diagnosis. It is better to err on the conservative side and immobilize a spine that is not broken than to fail to immobilize one that really is broken.

VERTEBRAL FRACTURES

One has to be brave indeed to name isolated fractures of the articular processes of vertebrae. Watson-Jones gives two particularly interesting references, Steiner,¹ and Rendich and Westing.² Steiner gives a most comprehensive treatise on these fractures, with a word of caution: "In my material I have no case of isolated fracture of a superior articular process." Also, "In cases of fracture around the inferior articular processes, one must be very careful in making the diagnosis of fracture." In Rendich and Westing's article the infrequency of fracture of articular processes is stressed,

and fracture of a superior articular process hardly seems possible. The lines seen in the cases presented are named accessory articular processes, or ossicles. And it seems likely that the authors are right. However, even with the words of caution just quoted, I find it difficult to place some of the following cases in the categories mentioned. The point in presenting them is that in all but one, L. M. E., the fractures could not be named in the routine antero-posterior and lateral views, but required either stereoscopic visualization or oblique views.

CASE REPORTS

Case 1: L. M. E. gave a history of lifting a piece of drilling machinery and developing severe lumbar pain. The usual antero-posterior and lateral views of his lumbar spine revealed fractures of the transverse processes of the third and fourth lumbar vertebrae on the right; besides, there was a fracture of the superior articular process of the fourth lumbar on the left. This fracture of a superior articular process is not an isolated one, of course, because there were fractures of two transverse processes on the opposite side. However, the appearance of the separated fragment is anything but what would be expected of an accessory articular process or ossicle.

Case 2: C. R., 65 inches tall, weighing 220 pounds, fell off an ice truck. Besides sustaining double inguinal herniae, he injured his lumbar spine. The lateral film gave little information, nor was much information obtained from the obliques. However, in the stereoscopic antero-posterior view it was interesting to visualize the fracture through the left pedicle of the fifth lumbar, into the transverse process, with the superior articular process displaced outward, and to trace the bone defect on one of the films.

Case 3: P. L. W., another 220-pound male, injured his back standing on his feet. On the stereoscopic films only was it possible to visualize satisfactorily the fracture through the left inferior articular process of the fifth lumbar. It was with assurance that I traced this fracture on the flat film after having seen it on the stereoscopic films. I mention this because I have been deprived of these films and cannot produce them.

Case 4: B. A., 220-pound male, not over 5 feet, 5 inches tall, was in a truck accident. The only point in presenting the case is that the vertebral arch fracture of the fifth lumbar on the right was brought out most satisfactorily in the oblique view.

Case 5: O. G. E., of interest only because on the stereoscopic films it was possible to trace the dragging vertebral arch of the fifth lumbar verte-

bra, along with the inferior articular process, following an old injury.

Case 6: V. K. was struck on the head by an eight-inch oil well casing. At the time a diagnosis of fracture of the spinous process of the seventh cervical seemed sufficient to warrant his symptoms. However, when the cervical splint was removed he continued having pain in the upper dorsal region, and an oblique view of the dorsal spine brought out the fact that there was a fracture of the right pedicle of the second dorsal as well.

Case 7: McH., a malingerer, of interest only because x-ray films saved an insurance carrier a good deal of money. Not even after he was confronted with the films could he remember distinctly when someone had introduced iodized oil into his spinal canal for diagnosis, following some previous injury. The case was not difficult to dispose of, and though it did cost money to close it, McH. would have made more as straw boss on the job than he received from an insurance carrier.

Case 8: P. B. was in an automobile wreck. In this case of multiple fractures of the vertebral arches of the cervical spine and of the dens of the second cervical, it was only by bare chance that the base of the dens was brought out after repeated examinations. In the antero-posterior view it was evident that there were fractures through the pedicles of the fifth, sixth, and seventh cervicals, and it was interesting to trace on the stereoscopic films the displacement of the vertebral arches. Later it was possible to bring out on a spotfilm in the oblique view these fractures even more satisfactorily. The curve of the cervical spine was changed. Textbook positions left one high and dry, and it took nothing short of an accident or real good luck to clear the dens of the second cervical of the shadow cast by the lower border of the occipital bone on the one hand and the upper teeth on the other.

THE X-RAY EXAMINATION OF THE NEWBORN

Recently, at home, we have been having too many deaths in newborn infants. As in other things in medicine they came one right behind the other. Two of them were sent to me with a diagnosis of enlarged thymus and died within a few hours of the time I saw them. Whether or not these were thymic deaths will never be proved. On the x-ray film both showed glands that were much enlarged, though in one case there was a triangular shadow through the heart that may have been atelectasis. That does not mean that all of the babies having symptoms attributable to enlarged thymus glands or atelectasis died. I shall show a

slide of one with atelectasis of the left lung who is thriving at this time.

There is much difference of opinion in this matter of the status thymicus, nor is it new. The following case may illustrate it. It was my first experience with a patient suffering from thymic symptoms. The proof of the fact that x-radiation administered nearly twenty years ago must have been of some benefit is that I attended her wedding last summer.

These are not the only babies that should receive x-ray examinations. Many a baby who cries night and day and is diagnosed as colic may have some lesion that may be demonstrated. One I had not six months ago, had a stomach that was still almost full at the end of four hours. On fluoroscopy a thin trickle of barium could be caught through the first part of the duodenum. My one regret is that I did not possess a spotfilm device at that time. There is no point in showing a slide, as all I could demonstrate would be the four-hour stasis.

We should not expect the spectacular, but sometimes we will find it on the x-ray film. The following case is such an instance:

Case 1: V. C., aged six weeks, was brought to our town with a diagnosis of a left Erb's paralysis. The referring physician requested x-ray of the cervical and dorsal spine. The baby did not move the left arm and screamed in pain whenever it was touched. In fact, no matter where this baby was touched, it screamed in pain. At that time the spine seemed to be negative. However, in the first examination the upper two-thirds of the left humerus was caught on one film, and there was seen what was thought to be callus from a fracture distal to that point. Additional films were requested. What was thought to be callus was a dense sleeve of subperiosteal bone around the lower third of the humerus. There was subperiosteal bone deposited around the radius and ulna, and tibiae and fibulae as well. In many of the bones dense white zones were seen just behind the epiphyses. The carpals and tarsals were ringed with dense white bands. And the metacarpals and metatarsals stood out, edged with white lines, with the central parts of the bones almost decalcified. All in all, this was a textbook case of scurvy, even to the pseudoparalysis. In the discussion that was provoked, it was finally brought out that the mother had been on a banana diet for two months prior to the baby's birth. The baby was put on the proper treatment,

and though it has been just a little over a month, she is moving the left arm almost as well as the other. The points of interest in this case are, the early age at which scurvy developed, the circumstances that led up to it, and the helplessness of the arm that was so pronounced that it had been splinted and diagnosed Erb's paralysis.

THE X-RAY OF THE GASTROINTESTINAL TRACT

Do not expect a diagnosis of everything in the intestinal tract on one ingested barium meal, the stomach today, the colon tomorrow. Often the colon requires a clyisma. Even then, with the colon filled with barium, and the barium syphoned off, and air introduced for the so-called double contrast media, there are difficulties enough encountered. It is not often that you will see what it was my good fortune to bring out in the slide I shall show you.

Case 1: S. D., a male in his late forties, was passing much blood with his stools. No amebae were found. Proctoscopic examination showed a congested rectum and sigmoid, with many points of ulceration, but the bleeding was out of all proportion to what was seen. Accordingly, a barium enema was administered. The gut was slickened, as was to be expected from a colitis, but imagine my surprise when the films showed many small ulcerations. Again the proctoscope was passed, deeper this time, more effectively, and then I really began seeing ulcerations. On anti-amebic therapy all symptoms cleared promptly.

Case 2: E. F. D., male, aged 52, had two separate and distinct emergency appendectomies. Every time he tried to resume work his pain and temperature recurred. Finally he developed a "gurgle," quite a distance below Poupart's ligament, a vague affair, which took me the longest to detect. It felt like gas moving through bowel, way down in the groin. There was no impulse on coughing, no tumor, just that "gurgle." We decided he had some out of the ordinary hernia, and operated on him again, but could find no hernia. There were many diagnoses made in this case, including "synovitis crepitans." Of course, we all x-rayed this man. The humiliating part of it was that the patient begged me to x-ray that part, but I ridiculed the idea. Later, I saw a film made by another roentgenologist with the marker covering the lesion. At a clinic, a great distance away, a film was taken of the region and the diagnosis of osteomyelitis of the femur was made.

I wish to stress that this series of cases was presented from the point of view of the rural practitioner, and not the city special-

ist. They illustrate what information may be obtained from the careful roentgenologic study of puzzling cases.

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SPREAD AND METASTASIS IN CARCINOMA OF THE CERVIX UTERI*

THEIR SIGNIFICANCE IN PLANNING TREATMENT

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NEW ORLEANS

In recent years refinements of radiologic treatment have placed carcinoma of the cervix uteri in a favorable group as regards its ultimate outcome. Two factors are principally responsible for this: increased knowledge concerning the tissue dosage required for control of the primary lesion, and the availability of equipment and of methods of extending this range of effective dosage to the lateral progressions of the disease. But the neoplasm also spreads anteriorly and posteriorly in a substantial number of cases either alone or in combination with parametrial involvement. Yet this fact has not received the same degree of attention, and such cases have been treated by irrational methods or dismissed as hopeless.

In order to formulate a more comprehensive and rational attack on the disease there is need for more factual information concerning the spread and metastasis of the tumor. This is best afforded by analysis of postmortem material, which furnishes concrete data on the extent of anatomic invasion in various stages and on the paths of dissemination.

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For this reason we have studied a group of 74 cases of carcinoma of the cervix which came to autopsy at Charity Hospital of Louisiana at New Orleans from January 1, 1930, to January 1, 1942. This material is contrasted with certain published and unpublished data obtained from a series of 57 autopsies on carcinoma of the cervix from the University of Minnesota studied by one of us.¹ This combined material, totaling 131 necropsied cases, is one of the largest sources available for analysis. For the sake of brevity we shall refer to the Charity Hospital group as Series A and the University of Minnesota group as Series B.

In this communication we refrain from dealing with such important aspects as infection and hemorrhage and have confined ourselves to the growth tendencies of the neoplasm. Believing that local spread and its consequences are of more practical value we will discuss it more completely, while remote metastasis will receive only incidental consideration.

LOCAL SPREAD

In Series A the areas of infiltration were described in 57 cases. The involvement was as follows: bilateral parametrial spread 60.3 per cent, unilateral parametrial spread 10.3 per cent, vaginal spread 32.7 per cent, rectovaginal tissues 17.3 per cent, and vesicovaginal tissues 8.6 per cent.

The monumental work of Kundrat² in 1903 as well as that of Sampson³ in this country in 1906 laid the foundation for our knowledge of the parametrial spread of the disease. Kundrat's material consisted of 80 operative specimens studied over a period of three years. Twenty-one thousand sections were made through the parametria and pelvic nodes. In 32 cases the parametria and the pelvic nodes were free. In 48 cases the growth had extended beyond the uterus. In all but four of these cases the parametria of one or both sides were involved. In 22 of these cases the parametria were involved but the lymph nodes were free.

It is possible to have involvement of the pelvic nodes without parametrial extension, which occurred in three out of nine of

Sampson's cases. Local lymphatic involvement in operable cases of carcinoma of the cervix runs fairly high. The following are some of the figures given by authors during the pre-irradiation era: Baisch⁴ 33 per cent, Von Rosthorn⁵ 42.4 per cent, Pankow⁶ 28.2 per cent, Schottländer⁷ 43 per cent, and Brunet⁸ 51 per cent. Higher figures are obtained in postmortem material. Thus Scheib⁹ states that lymphatic involvement is present in 43 to 73 per cent of cases at postmortem. In Series A the incidence of pelvic node involvement was 47.3 per cent and in Series B, 59 per cent.

Vaginal spread occurred in Series A in 32.7 per cent and Series B in 24 per cent. Schottländer and Kernmauner found the vagina involved in 36 per cent of their cases, Brunet in 43 per cent. It is quite evident from our series as well as from collected series that in a rather large proportion of cases the disease extends down the vagina. It is well to point out here that the radium technics in vogue are effective only in the upper third of the vagina and more extensive involvement and recurrences are difficult to manage.

In Series A the rectovaginal tissues were involved in 17.3 per cent of the cases. Our designation refers to spread beginning in the region of the rectovaginal septum subsequently involving the rectum at this point by pressure, invasion or fungation of the mass into the lumen. The constricting lesions are those which extend mainly along the uterosacral ligaments and give a characteristic "fish mouth" appearance on proctoscopic examination. Digital examination demonstrates the constriction about 8 to 10 cm. from the anus. The predisposition to fistulae is evident in such lesions.

Spread along the vesicovaginal tissues, which occurred in 8.6 per cent of Series A, extends along the septum between the bladder and the vagina, leading to infiltration of the former with consequent fistulous formations.

It is quite evident from this survey that spread occurs predominantly in the lateral direction and technics of radiation are planned to cope with this. Spread in other

directions has largely been ignored in the anatomic study of the disease as well as its therapeutic attack. Such manifestations of the disease have been considered as atypical and have been dealt with by improvisations that have often proved ineffectual and often hazardous.

CONSEQUENCES OF LOCAL SPREAD

The consequences of local spread become manifest with involvement of the ureters, bladder, rectum and pelvic bones. It is obvious from their location that the ureters would be involved early and frequently because of their proximity to the tumor. In Series A 65 per cent of cases had hydronephrosis, with bilateral ureteral constriction in 54 per cent and unilateral constriction in 10.8 per cent. In Series B hydronephrosis was present in 75 per cent of the cases with bilateral constriction in 52 per cent and unilateral constriction in 22 per cent. Thus in the two series (74 and 57 cases) the occurrence and consequence of parametrial spread agree fairly closely (except that of unilateral spread). The combined incidence of hydronephrosis in the two series (131 cases) was 69.5 per cent.

Not all cases of hydronephrosis develop uremia as can be attested by series B in which only 33 per cent died as the result of uremia. This, however, is the largest single cause of death.

Infiltration of the bladder occurred in 32.4 per cent and vesicovaginal fistula in 10.8 per cent of the cases in Series A. In Series B 15.8 per cent showed infiltration of the bladder and 7 per cent vesicovaginal fistula. The range of involvement of the bladder, especially vesicovaginal fistula, varies in different series. Williams¹⁰ found 75 per cent bladder invasion and 34 per cent vesicovaginal fistula. On the other hand Faerber¹¹ found only 10 fistulae in 150 autopsy cases.

In both series we found a large number of lesions which had extended to the intestines. The total number of rectal lesions inclusive of fistulae in Series A was 21.1 per cent, whereas in Series B it was 40.4 per cent. In the former, rectovaginal fistula occurred in 6.7 per cent and in the

latter in 14 per cent. In other series fistulous formation varies considerably—from Bekman's¹² series of 6 per cent to Faerber's series of 30.7 per cent.

Intestinal obstruction occurred in Series A in 12.1 per cent and Series B in 12.3 per cent. The large number of obstructive lesions have interested us for some time and have been reported elsewhere.¹³ It seems surprising that our study was the first in the English literature when one considers the high incidence of this complication. The only comprehensive study of the subject available previously was that of Halter.¹⁴ The neglect of this phase is probably accounted for by its unimpressive clinical manifestations. Tumor spreads along the uterosacral ligaments, constricts the rectum and low grade intestinal obstruction ensues. The symptoms associated with it are very vague and the obstruction often is not recognized. Intestinal obstruction was the immediate cause of death in 6.7 per cent of cases in Series A and 7.4 per cent in Series B, a fairly close agreement.

Spread may also occur to the bones of the pelvis, as indicated in a previous communication.¹⁵ This has been stressed by Philipp,¹⁶ Traube¹⁸ and others. Philipp believes that this is frequent and states that it occurs in 8 to 10 per cent of his cases under treatment. The process begins as an erosion along the iliopectineal line, extends over the wing of the ilium, then to the pubis and back to the sacrum. We found one case in Series A and two in Series B. In the former it was not a true extension but secondary spread from an enlarged iliac node. We ascribe its infrequent occurrence to the adequate radiation delivered over the entire bony pelvis.

DISTANT METASTASIS

In far advanced cases distant metastases are seen with a fair amount of regularity. Thus Feilchenfeld¹⁹ in 1902 found distant metastasis in 28.2 per cent, Andreizen and Leitch²⁰ in 1906 in 20.4 per cent and Williams in 1908 in 20.2 per cent. The percentage of distant metastasis in Series A and

B were 25.7 per cent and 25 per cent respectively.

The two series were compared as to five frequent sites of distant metastasis and Series A and B were found to have the following incidence: liver 10.8 and 19 per cent, lung 8.2 and 9 per cent, pleura 5.4 and 5 per cent, peritoneum 9.3 and 5 per cent and bone 5.4 and 7 per cent. These figures coincided fairly closely with autopsy statistics from other authors.

We have been particularly interested in metastatic bone involvement and have encountered this at Charity Hospital seven times. One of these cases has been mentioned already. Four of these cases occurred in Series A and three in a clinical series. In a review of the entire available literature we found that the majority of distant metastases involve the lower extremities. In a group in which the spread was by way of the lymphatics the lumbar vertebrae were most frequently eroded from lateral lumbar nodes. Recurrences in this area may be present even with adequate radiation to the pelvis and at the present time there is no effective method for dealing with this type of recidivation.

SUMMARY

Seventy-four cases of carcinoma of the cervix coming to autopsy at the Charity Hospital of Louisiana are analyzed and contrasted with a group of 57 necropsies previously studied at the University of Minnesota.

It is pointed out that local spread occurs predominantly in the lateral direction, but that the neoplasm also extends in the sagittal plane in a substantial proportion of the cases. The consequences of neoplastic involvement of the pelvic organs are indicated, and the incidence of metastasis to extra pelvic organs is briefly stated. The current plans of treatment are inadequate in controlling sagittal pelvic spread.

In reviewing this material one is impressed with the consistency that obtains in the involvement of certain organs, indicating fundamental biologic regularities in the growth pattern of the neoplasm. It is hoped that more careful analysis of the lesions

will redound to the benefit of the patient by permitting a more rational attack on the disease.

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DISCUSSION

Dr. Peter Graffagnino (New Orleans): I am glad to have had the opportunity of listening to this paper. We all know that cancer is definitely on the increase and cancer salvage is still pitifully low. If this paper accomplishes the purpose of bringing to the attention of all men who practice medicine the fact that cancer spreads laterally by hematogenous as well as lymphatic avenues, it will prove of value to a great many women with cancer of the pelvis.

The greatest advance made in treatment of cancer of the cervix in the last ten years is the recognition by surgeons that, primarily, surgery plays

no part whatsoever in its treatment. Until we know more about the etiology of cancer there is only one accepted method of treatment of cancer of the cervix today, and that is adequate irradiation. The earlier the discovery of cancer, naturally the greater chances of cure. Its treatment is predicated on extensive and adequate irradiation: by this is meant not less than 5,000 milligram-hours of radium application to the cervix and vault of the vagina and uterus, and not less than from 10,000 to 14,000 units of radiation. If the surgeon is convinced that surgery is indicated, he should wait until the patient has had adequate irradiation before removal of the uterus because in so doing, he removes the only effective avenue for radiation that the patient has.

In the treatment of fundal carcinoma, surgery plays a minor part only. Here again, when a diagnosis is made, do not immediately remove the uterus because if this is done, the patient is deprived of at least 30 per cent of her chance for recovery. Carcinoma of the fundus is not a surgical case per se: it should be treated by radiologic methods, externally and internally, and the uterus removed if possible, subsequently. Where it is impossible or not feasible to remove the uterus, radiation therapy must be relied upon.

Dr. Woodard Davis Beacham (New Orleans): This lucid, thorough, sincere presentation of Drs. Pearson and Garcia deserves especial commendation. The motive which prompted a pathologist and a radiologist, mutually interested in the other's field, to conduct such an investigation is more than merely noteworthy. They proposed to study the "life cycle of the disease" in order that therapeutic and prophylactic measures might be improved or initiated. Evaluating the progress which has been made in the management of uterine cervical malignancy, they have set forth in an attempt to ascertain facts which would be beneficial in preventing and/or treating metastases.

Proper emphasis has been placed by them on the subject of urinary tract involvement. And, in this connection it is interesting to note that it was only about two and one-half years ago that we began cystoscopy routinely these cases at the Charity Hospital of Louisiana at New Orleans, and to the essayists we give due credit for their efforts in this direction. At that institution today every patient given x-ray or radium therapy for cancer of the genital tract receives adequate urologic scrutiny—a very important step.

Too, they discuss the importance of intestinal complications. Writing in the April issue, 1942 of *Surgery, Gynecology, and Obstetrics*, Cutler, of Chicago, states that he has encountered two examples of "postradiation intestinal obstruction resulting from benign stricture of the intestine", and he mentions the observations of Jones, of Cleveland, who reported seven cases.

As a result of the studies of Drs. Pearson and Garcia there shines another ray of hope for individuals with advanced uterine malignancy, victims who have been classified in the past as "too far gone" and the family told "there is no need even to try treatment."

You have noted that this pathological Damon and radiological Pythias do not bemoan the fact that less than 7 per cent of cervical carcinomas seen by them can be clinically graded as I and that more than 70 per cent must be recorded as stages III or IV. They fully realize that there are no "early" signs of symptoms of cancer from these patients' point of view. Every patient with a beginning cancerous lesion of the cervix is not lucky enough to experience bleeding which proves distressful to her and which results in an immediate examination by her physician. Nor are some of these individuals fortunate enough to be seen by physicians who have the inclination of "cancer consciousness." Let us hope that the day is not too distant when every single woman over thirty years of age and every married one will be given the benefit of careful gynecologic examination at least twice each year. It seems trite to say that in order for one properly to examine the cervix uteri one must thoroughly inspect that structure, using a good light and removing cervical secretion. We must keep in mind the words of Novak, "From a clinical standpoint the early, favorable cases are characterized by a gross picture which does not in any way suggest the traditional picture of cauliflower growth, or of an excavated ulcer. As a matter of fact, the lesion in these early cases is clinically only suspicious in appearance, and the diagnosis can be made only on biopsy and microscopical examination." We firmly believe that it is far better to biopsy a "suspicious-looking" cervix and get a "negative" report than it is to fail to employ that simple procedure and to wish a few weeks or months later that we had consulted the pathologist.

In conclusion, I wish to state that just as pathologic consultation aids us greatly, so should we seek expert radiologic advice in the management of these cases. In the event of "cure" there is always glory for all concerned and if the worst comes to pass there is surely more than enough grief to go around.

Dr. Manuel Garcia (In closing): Our intention in making this study has been to gain a better knowledge of the pattern of spread of the tumor, in order to plan measures that may be more successful in the future management of advanced cases. We know that it is useless to hope for early cases, in the majority of instances, so our efforts should be directed towards more effective control of the advanced cases.

CHEMOTHERAPY IN THE DIGESTIVE TRACT*

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Chemotherapy is an age-old method of treating disease among human beings. Many substances have been used as chemical agents. Through the years, however, in spite of the profusion of agents available or suggested, physicians have only rarely been able to rely on chemotherapeutic agents as the sole measures of therapy. Additional supportive measures usually are necessary to turn the tide of a severe disease toward recovery. Perhaps the outstanding examples of the value of a combination of suitable chemical therapeutic agents are those drugs which are commonly used against infections caused by the *Endamoeba histolytica*. Without any additional supportive treatment, nearly all instances of amebiasis can be controlled or perhaps cured by the properly timed administration of the correct combinations of specially compounded preparations of ipecac, arsenic and iodine.

There has been a constant search for a chemotherapeutic agent which would heal the inflamed bowel with or without the employment of supportive agents. Most physicians have tried or have seen tried such agents as tincture of iodine, arsenic, bismuth, the disodium salt of 2,7-dibromogamma-hydroxymercuri-fluorescein (mercurochrome), acriflavine, silver nitrate, gentian violet, calcium salicylate, and a host of others. Most physicians, also, have thought they have seen beneficial effects result from the use of such agents in selected cases. Yet, when series of cases actually were analyzed, it was found that none of these drugs benefited more than a few patients.

As a result of these experiences, the advent of the sulfonamides has been viewed with mixed feelings of hope and skepticism. The appearance of the sulfonamides stimu-

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lated the hope that patients who had various types of ulcerative intestinal lesions might obtain more rapid deliverance from their sufferings than they had previously experienced. In some instances this hope was realized. I propose to summarize briefly our experiences with the various sulfonamides in the treatment of several ulcerative intestinal diseases at the Mayo Clinic.

ULCERATIVE COLITIS CAUSED BY VENEREAL
LYMPHOGRANULOMA

This type of colitis results in dense inflammation of the wall of the distal segments of the large intestine and infiltration of the perirectal tissues. Obviously, then, drugs must be used which will not only cover and penetrate the surface of the rectum but will also reach the tissues around the bowel as well. At first it was the practice to administer sulfanilamide orally in doses of from 50 to 75 grains (3.2 to 4.9 grams) a day for three or four weeks. Toward the end of this time, in some cases, a most striking transformation in the proctoscopic appearance of the lesions occurred. Frequently, however, the disease process promptly returned within a few weeks after cessation of administration of the drug. The daily use of sulfanilamide retention enemas (60 grains or 4 grams) has resulted in complete healing of the proctitis within several months' time. A combination in which the drug has been administered by mouth and by rectum has yielded better results than the use of either method alone.

Sulfathiazole also has been used with success. The inguinal type of venereal lymphogranuloma in particular has responded well to the administration of 1.5 gram of sulfathiazole three to five times a day for three weeks, followed by the giving of 1 gram three to five times a day for another three weeks. In many cases proctitis and early formation of stricture have yielded readily to such treatment. The presence of more marked strictures will, of course, extend the treatment. In such a case the drug should be administered in courses; that is, it should be given for two or three weeks; then the patient should be

allowed a rest of a week; then the drug should be given again.

The administration of sulfaguanidine in doses of 10 grams daily for several months has been associated with progressive improvement in the local lesion, as well as with general improvement in the condition of the patient. The number of rectal discharges has decreased from 15 to 20 a day to about two to six, and bleeding has been stopped. The rectal stricture has been known to become softer and the adjacent rectal wall has become thinner and more pliable.

Thus, in this most intractable of all intestinal lesions some advances have been achieved that heretofore have not been obtained by any other form of therapy.

ULCERATIVE COLITIS
(A LATE PHASE OF BACILLARY DYSENTERY)

In this condition, also, various preparations of sulfonamide have been used. Sulfaguanidine has potent antibacterial properties, is soluble in water and is poorly absorbed from the gut. The drug should be administered in doses of 1 gram every two hours, or 2 grams every four hours, so that a total of at least 12 grams is given each 24 hour period. It is well to administer the drug for two weeks, to allow the patient a rest of a week, and to repeat administration for a second two weeks, provided that untoward effects have not occurred during administration of the drug.

Sulfadiazine and sulfathiazole also have been found to be effective against this form of ulcerative colitis.

During the second week of administration of the drug, the frequency of passage of stools usually will be reduced, bleeding will become less or will cease altogether, and the patient will begin to feel much better.

TUBERCULOUS COLITIS

Some of the drugs of the sulfonamide series have had experimental and clinical trial against tuberculous colitis as well as against other forms of ulcerative colitis. Among the drugs that have been administered more recently with some success to modify, inhibit and prevent tuberculosis in

guinea-pigs are sulfanilamide, sulfapyridine, azosulfamide, promin and others. Promin (p, p'-diaminodiphenyl-sulfone-N, N'-didextrose sulfonate) has been particularly efficacious in preventing and modifying favorably the course of tuberculosis experimentally produced in guinea-pigs. Consequently, this drug has been administered, under carefully controlled conditions, to some human beings who have tuberculosis. It can be administered orally, subcutaneously, intramuscularly or intravenously. The dosage for oral use has ranged from 1.2 gram to 3.2 grams a day, but as much as 16 grams a day has been given parenterally. The drug is highly soluble and a 40 per cent aqueous solution can be administered readily. The only toxic effect of the drug (and one which demands great caution in the use of it) has been the development of a hemolytic type of anemia. Such anemia may become very profound, but apparently occurs largely when the drug is administered orally. As yet it is not possible to predict what place this or other drugs of this series will have in the control of tuberculosis, but early results of trial offer some encouragement.

STREPTOCOCCIC (THROMBO-ULCERATIVE) COLITIS

Patients who have this form of ulcerative colitis represent by far the largest group of those who have so-called chronic ulcerative colitis. In fact, in one series of 1,573 patients suffering from ulcerative colitis who came under our observation consecutively at the Mayo Clinic in the years 1925 to 1931, inclusive, the condition of 871 was of the streptococcic type.

The treatment of this most intractable disease has been detailed repeatedly. The drugs mentioned near the beginning of this paper all have had ample trial in the treatment of this disease. Again, I wish to emphasize the fact that drugs of the sulfonamide series have an additional value, so to speak, in the treatment of this form of colitis. A number of them received their initial trial in this disease. While I was in London in the fall of 1936, Dr. Philip Manson-Bahr spoke to me of the hydrochloride

of 2:4-diamino-azobenzene-4-sulfonamide (prontosil) in the treatment of various streptococcic diseases. It was thought then that such a drug might be useful in the treatment of thrombo-ulcerative colitis. Not until the fall of 1937, however, was any such drug available in the United States. After preliminary trial of a number of the drugs of the series, the disodium salt of 4-sulfamido-phenyl-2' azo-7' acetyl-amino-1' hydroxynaphthalene - 3:6'disulfonic acid (neoprontosil) was found to be eminently suitable for this form of colitis. Its wide limits of safety and relative lack of toxicity, its moderately rapid excretion from the body and its possession of an action apparently in addition to that of sulfanilamide were established early. As experience with the drug increased and confidence in its relative lack of toxicity became established, its use was extended to include patients whose condition was more refractory. To date this drug has proved to be the most helpful of the sulfonamide preparations used in this form of colitis. Several hundred patients have obtained striking and lasting benefit from its use alone, or by its addition to other measures of therapy found helpful in the past, such as serums, vaccines, transfused blood, liver extract, and others.

It is customary to administer from 50 to 90 grains (3.2 to 5.8 grams) of the drug each 24 hour period, giving 10 to 15 grains (0.65 to 1 gram) at a dose, every four hours of the 24. The drug is administered for two weeks; the patient then is allowed a rest of a week, and then he receives it for another two weeks.

The fact should be mentioned here in that the huge, sloughing lesions of the skin, of the nature of pyoderma gangraenosum, occurring occasionally in advanced thrombo-ulcerative colitis, also have receded and healed after the administration of the drug by mouth.

Another drug which has proved helpful in some of these cases is sulfaguandine, administered in doses of 8 to 16 grams in divided doses, each 24 hour period. A similar period of rest to that allowed for patients receiving neoprontosil has been found

advisable. In table 1 is an illustrative example of the effect of its use.

Sulfathiazole administered in the usual amounts also has proved valuable in some of these cases.

The most recent drug which bids fair to be of help to some patients seriously ill with this disease, particularly when other drugs have been ineffective, or when it is desired to use a well-tolerated drug which can be given in rather large amounts, or when patients become sensitive to other forms of sulfonamides, is succinyl sulfathiazole. It has been said that this drug can be given on the basis of 0.25 gram per kilogram of body weight each 24 hours, but smaller amounts have been found to be effective. I have administered 1.5 gram every four hours for several weeks with marked relief of symptoms and without the production of toxic effects. A patient who had passed a half bedpanful of bloody pus 10 to 15 times each 24 hours has passed discharges free from blood within five to six days after the institution of treatment with this drug, with marked reduction in the amount of discharge from the bowel and in frequency of passage.

It is to be hoped that ultimately some drug of this series will be available which will be even more effective than those which have already had ample trial.

REGIONAL ULCERATIVE COLITIS

There is a segmental form of ulcerative colitis which resembles in many respects so-called regional ileitis. Perhaps a better term, and one which includes segmental inflammatory disease of any portion of the intestine above the sigmoid would be "regional enteritis." It can be said that, utilized at the proper time, surgical resection of the ulcerated segment of bowel is the treatment of choice, but this form of colitis will not in every case lend itself to the application of surgical procedures. In some cases this form of colitis has responded very satisfactorily to drugs of the sulfonamide series. To date sulfaguanidine seems the drug of choice in these cases.

COLITIS OF UNKNOWN ETIOLOGY

In many cases ulcerative colitis differs markedly from the forms described in the

foregoing categories, in the gross appearance of the lesions observed through the proctoscope, in their roentgenologic manifestations, in their clinical course, and in failure to find any pathogenic forms of bacteria or other organisms either in the lesions themselves or in the rectal discharge of the patients. The function of this presentation is not to discuss the details of a differential diagnosis of the various forms of ulcerative colitis, for it is likely that the syndrome under consideration herein may include several unrecognized etiologic factors, but rather to discuss one measure of therapy.

In some cases, likewise, patients have responded to the administration of one or more of the sulfonamide preparations. It is in these cases, particularly, that no single measure of therapy has sufficed. Many supportive therapeutic agents have been found helpful for these patients. Among the sulfonamide drugs, sulfaguanidine has proved to be particularly efficacious, and for some the combined use of two of the sulfonamide drugs has been worth while. To some very ill patients I have administered 45 grains (3 grams) of sulfathiazole and 90 grains (5.8 grams) of sulfaguanidine each 24 hours, in divided doses, with striking remission of symptoms when other forms of treatment proved ineffective. The thought had occurred to me that perhaps some of these drugs exerted a synergistic effect upon each other.

DIVERTICULITIS

During the active stage of diverticulitis, when there is marked swelling and tenderness of the involved segment of bowel, the administration of sulfaguanidine in doses of 12 to 16 grams a day, administered in such a manner that the patient receives 2 or 3 grams approximately every four hours, seems to have materially shortened the attack of diverticulitis. Occasionally, all the viable organisms of the *Escherichia coli* group can be eliminated from the intestinal tract by the administration of large amounts of this drug, and although the organisms may return promptly after discontinuance of use of the drug, this temporary

approach to sterilization seems to be helpful.

PERFORATING CANCER

Early hopes that the employment of sulfaguanidine would be a great aid in the pre-operative preparation of the average patient suffering from cancer of the colon have not been borne out. When such cancers have perforated, however, and the patient has fever, a tender mass, and all the concomitants of such a condition, the judicious administration of sulfaguanidine, before surgical intervention, has been of material help.

GENERAL CONSIDERATIONS

The nature of lesions in which improvement is to be anticipated: It is hardly to be expected that any chemotherapeutic agent will restore to normal the physiologic function of a bowel which has been scarred and has become contracted and deformed by disease of long standing. Obviously, under such circumstances all that any such drug can be expected to accomplish is control of symptoms that are caused by active infection; those symptoms which result from altered function of a deformed bowel must be expected to continue to disturb the patient.

Good results from the use of these drugs should be directly proportional to the activity of a given infectious process, the acuteness of the symptoms, the brevity of the history, and the lack of permanent damage to the bowel. If these considerations are kept in mind, improvement of patients who have ulcerative intestinal disease is expected to result from the proper drug administered at the most suitable time.

Concentrations of sulfonamides in the blood stream: The fact that the sulfonamides are potent drugs, associated with deleterious effects to the human body if they are administered in amounts greater than those required for therapeutic effects, should always be kept in mind. For this reason, careful studies of the chemistry of the blood must always accompany the therapeutic administration of the sulfonamides. Values for hemoglobin, red and white cells must be followed. Further-

more, the concentration of the various drugs required in the blood for therapeutic effect varies greatly, both in the matter of the patients receiving them as well as in the matter of differences in the several drugs employed. For the average patient a concentration of 3.5 mg. of neoprontosil per 100 c. c. of blood is effective. The same can be said for sulfaguanidine. However, for sulfanilamide, sulfathiazole and sulfadiazine, concentrations of 8 to 10 mg. of the drugs per 100 c. c. of blood will be required for effectiveness. A concentration of about 5 mg. of succinyl sulfathiazole per 100 c. c. of blood seems effective. All these figures are average, and in some cases much lower concentrations have been found necessary for therapeutic results.

Toxic effects of sulfonamides: It would hardly be necessary to detail herein the symptoms which result from the use of too much of any of these drugs; that is, headache, nausea, dermatitis, indigestion, vomiting and hematuria. It does seem wise, however, to offer a word of caution concerning the administration of large amounts of the drugs. Some people are very sensitive to these drugs. An occasional patient will be overcome by marked nausea produced by only one tablet of sulfathiazole. I have seen a shock-like phenomenon follow the taking of two tablets of sulfadiazine, and severe generalized dermatitis result from the use of three tablets of sulfaguanidine. Consequently, at the Mayo Clinic we have adopted the practice of giving very small initial test doses to patients who have never had any of the drugs. Occasionally, too, a patient may tolerate the first course of the drug well, but on the first day of the second course may exhibit severe toxic symptoms. Hence, it is well to initiate the second course with very small amounts of the drug.

SUMMARY

We have tried to evaluate our knowledge of the use of sulfonamide preparations in ulcerative intestinal disease. It must be remembered that no attempt has been made to discuss the treatment of these conditions in detail, but that only one agent of therapy

has been considered and an attempt made to establish its place in the treatment of ulcerative intestinal disease. No doubt the experience herein recorded will be different a few years from now for new drugs are constantly brought forth, and successive ones frequently are better than their predecessors.

TABLE 1
RESULTS OF TREATMENT OF PATIENTS WHO HAD
CHRONIC ULCERATIVE COLITIS

	Sulfaguanidine alone used Colitis, group 1, streptococci			Sulfaguanidine & other therapy		
	Mildly active	Moderately active	Severely active	Mildly active	Moderately active	Severely active
Clinically arrested (remission)	1	2	1	1	1	3
Markedly improved	..	1	..	3	2	..
Moderately improved	1	..	2	..	1	5
Slightly improved	..	..	..	..	..	1
Unimproved	1	2	3	..	..	1

DISCUSSION

Dr. Donovan C. Browne (New Orleans): Probably my few remarks should be best put on the negative or cautious side. We, as physicians, are always trying to find some particular drug which is a panacea in every entity which we encounter. I notice it has brought about a little unpleasant situation at times in that we lose sight, as Dr. Bargaen brought out in the beginning of his paper, of diagnostic factors. I have seen patients starting with diarrhea and without rime or reason other than a number of loose stools, the physician immediately starts with one of the group of sulfonamides, trying therapeutic measures without actually making a diagnosis. Let us not get too far from the fundamentals of diagnosis and get to the therapeutic side before we find out what we are dealing with and also let us not forget what Dr. Bargaen stressed here, that chemotherapeutic agents are only one of the measures. Let us not pass over things tried and found not wanting. These measures that we have employed should be balanced, even in well diagnosed cases.

There was one point in his statement of the per cent of ulcerative colitis in his group—you must remember that Dr. Bargaen's particular setup makes it likely that he has such a high per cent of ulcerative colitis cases which probably you and I, in practice, do not run across, so we should not jump at conclusions and go on the percentage as he outlined here.

The final point here is the poor result that some of us get is based on too small a service. We have one patient and if we do not get good results with a certain drug in a very short time

we are ready to condemn it and pass on to the next fancy that comes along. In that way we are liable to pass up very good therapeutic agents. Only then, with analysis of cases as we have seen here this afternoon and a large series, can accurate conclusions be drawn or helpful therapeutic armamentarium stressed. No one should start using the sulfone group until he is in a position to control the complications which might arise.

Dr. A. A. Herold (Shreveport): Like Dr. Browne, I fully appreciate the measures which Dr. Bargaen brought to us, which is welcome information. I was especially interested in two of the drugs that he mentioned; one of them is promin and the other sulfasuxidine. Last year at Cleveland, two men from the Mayo Clinic presented a paper before the A. M. A. on work with promin in tuberculosis, in which very satisfactory results were reported; guinea-pigs were inoculated with living tubercle bacilli and given promin in sufficient quantity and survived; those sacrificed for autopsy, three weeks later, showed that fibrosis had taken place in areas of infection, instead of the caseous degeneration that is usually found. It would be wonderful if the time would come when, after making a diagnosis of tuberculosis of the intestinal tract, there could be made a promise of cure by simply giving promin, but recent inquiry from Parke-Davis & Company brings out the information that this preparation is not yet ready for the market, due to its toxicity for which it is now being tested.

Sulfasuxidine is very promising for sterilizing the intestinal tract, as mentioned by Dr. Bargaen. In fact, according to an article published recently in Archives of Surgery, it was stated that the rate of absorption of this preparation is fifty times slower than sulfathiazole; in other words, after giving 50 grams for an intestinal condition, the blood percentage would not be any higher than that after one gram of sulfathiazole. I would like Dr. Bargaen to tell us what size doses he gives to obtain the percentage he mentions and also tell us more about this chemical. Sharp & Dohme, who have put it out experimentally, say it will be ready for the market soon.

Dr. John H. Connell (New Orleans): I just wish to mention a few things which might be of considerable interest to the more rural physician, especially in Louisiana. Several years ago in a pediatric series at the Huey P. Long Hospital at Pineville, where we had a great number of upper respiratory infections, along with children undergoing great malnutrition and anemia, it was our custom routinely to examine the stools. We found, after treatment of the upper respiratory system with sulfathiazole, those infants—about 45 per cent of the children on the service—had parasites of various kinds. After three or four days' use of the drug these were eliminated from the gastrointestinal tract. In a series of several hundred

cases there were very few in which the parasites were not completely eliminated.

We found sulfadiazine efficacious in the treatment of cases of hookworm and other parasites, without upper respiratory infection, in 75 per cent of the cases, if given in a sufficiently large dosage over a period of ten days or two weeks. The parasites were eliminated and it was thought safer than the more drastic drugs. We found in the other 25 per cent that sulfathiazole in most instances, if given, will control, if not completely eliminate the parasites in the bowel.

Another observation—we had a rather severe epidemic of nonspecific enteritis in infants, which occurs in a great number of hospitals. I have seen, in Charity Hospital in New Orleans, several years back, complete wards cleared out over a period of a few days. We had an experience of that in Pineville about nine months ago and at that time used sulfaguanidine in large quantities and the mortality rate was nil.

FEEDING INFANTS*

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NEW ORLEANS

The feeding of infants requires the exercise of special attention designed to promote the continuance of maternal nursing and to supply indispensable nutrients in exceptionally liberal quantities.

Perhaps the commonest feeding problem encountered during early infancy results from the assumption that breast milk is deficient in quality and quantity. This assumption is favored by the tendency displayed by many infants to cry excessively and to suck their fists; by the mother's inability to distinguish the cry of hunger from that of other distresses; by the comments of friends who often suggest some fault in the quality of the breast milk, and by the mother's confirmatory observation that her milk appears blue and watery. These and numerous other factors often combine to undermine the mother's confidence in her capacity to nurse her baby successfully and tempt her to solve her

Dr. J. Arnold Bargaen (In closing): We have been using the promin in an experimental way for quite a long time, but the evidence of what it will do in humans is still inconclusive. When one tries a drug like this in a disease such as tuberculosis, the best results should be anticipated in the early cases. Experimental studies offer encouragement for the future so far as this drug is concerned.

Concerning succinyl sulfathiazole we can probably use larger doses than we are using at present. We are giving about 1½ to 2 grams every two or four hours. We have given it to only 12 individuals and it is a little early to draw any conclusions. Patients receiving it had tried other sulfonamides before and had toxic effects or no effects from the others. The experimental evidence suggests that we might give 0.25 grams per kilo of body weight.

problem by resorting to the use of artificial formulas.

Under these circumstances the continuance of maternal nursing is strongly favored provided the infant's gain in weight is found to be normal and the mother is assured that her milk is normal in appearance and the baby's restlessness at night can be relieved by the administration of mild sedatives such as chloral hydrate or phenobarbital.

If, however, the infant has failed to make a normal gain in weight the supply of breast milk is obviously inadequate, and under these circumstances the baby must receive additional food. Ordinarily this problem is solved by offering liquid milk formulas by bottle, but unfortunately this procedure soon results, in many instances, in a gradual decline in the vigor with which the infant nurses at the breast. The resultant incomplete drainage of the breast progressively diminishes the quantity of milk it secretes, thus mixed breast and bottle feeding commonly leads to weaning from the breast in a relatively short period.

Since the consumption of semi-solid foods seldom diminishes the infant's willingness to drain the breast completely, the continuance of maternal nursing is strongly favored if appropriate moderately thick preparations, fed by spoon, rather than liquid

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formulas fed by the bottle, are used in the early weeks of life to compensate for varying degrees of deficiency in the supply of breast milk. Various commonly used liquid milk formulas can be converted with ease into suitable semi-solid preparations by cooking cereal in them.

When used adequately in conjunction with breast feeding, the cereal thickened formulas compensate for deficiencies in the supply of the mother's milk; they are tolerated well as early as the third day of life; they provide additional milk; and they are taken readily by spoon. Young infants are inclined to use the tongue to push spoon fed food forward out of the mouth, but in a comparatively few days, this reflex is replaced by the more mature act of swallowing. When this adjustment has been made babies usually prefer rapid rather than slow spoon feeding.

During the period the baby is being trained to take a semi-solid food, it is preferable to offer the cereal thickened formula immediately before each breast feeding. Later, however, this order of feeding may be reversed, particularly if the consumption of large quantities of semi-solid food tends to diminish the vigor of nursing. Obviously the amount of cereal thickened formula offered per meal should vary according to individual requirements.

During the past fifty years the diets recommended for infants and children have been greatly liberalized in America. At the turn of the century infants were fed almost exclusively on milk throughout the first year of life, and during the second year, fruit juices and fruits, eggs, vegetables and meat were added cautiously and sparingly to the diet. At that time acute gastrointestinal disease in artificially fed infants was the leading cause of death. The milk available on the market was inadequately refrigerated and was rarely pasteurized. It was teeming with bacteria and the dirt, hair, manure and other filth it contained were grossly visible in glass milk bottles. During the nineties physicians were probably unduly inclined to attribute many acute gastrointestinal disturbances to the

harmful effects of various constituents of cow's milk, particularly to its protein. They were convinced of the necessity of varying the percentage of protein, fat and carbohydrate in cow's milk according to the age, assumed needs, and special requirements of each infant, and this conviction resulted in an elaborate percentage method of feeding. Furthermore the physicians of that day observed an increase in the incidence of scurvy following the use of sterilized food, and they lacked precise information as to how the disease may be prevented.

In view of the situation that existed fifty years ago, it is not surprising that physicians of that period were inclined to defer the introduction of foods other than milk into the infant's diet until after the first year of life was completed. But the advances that have been made during the past half century have permitted a remarkable liberalization of the diets of infants and children.

The general plan now in use at the Louisiana State University School of Medicine for adding different foods to the diets of infants who are receiving liberal quantities of breast milk is as follows:

AGE IN MONTHS	FOODS USED IN ADDITION TO NURSING
0-1	Fruit juices and cod liver oil, or their equivalents.
3	Different cooked cereals with salt and sugar added according to taste.
4	Crushed peas, carrots, spinach, ripe banana.
5	Boiled egg yolk, additional crushed (unstrained) vegetables, and fruits.
6	Whole egg, custard, sardines in oil, creamed tuna, salmon, shrimp.
7	Ground beef, fowl, liver, additional vegetables and fruits.
8	Start weaning; give boiled cow's milk.
9½-10	Wean; give three meals daily and a mid-afternoon lunch.

Since infants thrive when appropriate semi-solid foods are incorporated into the diet at an early age, and since subsistence on multiple overlapping sources of essential nutrients safeguard nutrition, we are now using the following more liberal diet either when the infant is only partially breast fed or it is totally fed on artificial foods.

AGE IN
MONTHS

FOODS ADDED

- 0-1 Breast milk if available, plus cereal thickened formula; otherwise, cow's milk formula, plus cereals, also cod liver oil and orange juice or their equivalents.
- 1-2 Crushed peas, carrots, boiled egg yolk, applesauce, prunes, banana.
- 3-4 Creamed tuna, salmon, shrimp, sardines in oil, liver soup, whole egg, custard, tapioca, potato, cauliflower, asparagus, tomato, string beans, vegetable soup.
- 4 Ground beef, fowl, liver, beets, spinach, eggplant, cabbage, beets, peaches, apricots.

Continuance of this program of periodically adding new food items as age advances results in the provision of a very liberal diet early in life. It will be noted that we are offering moderately coarse vegetables, crushed with a fork rather than strained, but creamed tuna fish, salmon and shrimp with a white sauce to facilitate the swallowing of foods which otherwise tend to lodge and accumulate in the roof of the mouth of the young infant.

Apparently the early introduction of a wide variety of moderately coarse (unstrained) foods into the diet is advantageous in several respects. This policy acquaints infants at an early age with the majority of the important flavors and aromas they are apt to encounter during life, and this use of crushed rather than strained vegetables and fruits accustoms them to swallow moderately coarse particles of food. These accomplishments are of value in that they tend to eliminate the inclination displayed by many babies to gag, to vomit, to refuse food, to acquire aversion to certain foods, and to develop anorexia either when foods with unfamiliar flavors and aromas are introduced into the diet or when a transition from finely strained to coarse chopped foods is undertaken relatively late in infancy.

In addition to promoting good eating habits which tend to persist, the introduction of a wide variety of semi-solid foods into the diet at an early age provides multiple overlapping sources of known and unknown essential nutrients. Continuance of this policy provides young children with a diet which corresponds closely with that

preferred for older children which includes the following foods for daily consumption.

1. Milk and dairy products.
2. Vegetables.
3. Cooked and fresh fruits.
4. Eggs.
5. Meats.
6. Cereals.
7. Cod liver oil.

SUMMARY

I wish to stress a few points which seem to be important. Since mixed breast and bottle feeding favors premature weaning from the breast, the routine use of cereal thickened formulas, fed by spoon to young babies for the purpose of compensating for varying degrees of deficiency in the supply of breast milk, is recommended. This alternative for complementary bottle feeding does not discourage the continuance of maternal nursing.

The introduction into the diet of a wide variety of appropriate semi-solid foods at an early age is also recommended. This practice establishes excellent eating habits, which tend to persist. In this manner the early use of a liberal diet favors the prevention of two very prevalent conditions found in children, namely anorexia and aversions to certain foods. The liberal diet also supplies multiple overlapping sources of known and unknown essential nutrients. Fortunately, young infants take semi-solid foods readily, and experience no appreciable gastrointestinal or allergic disturbances from the consumption of appropriate foods which contraindicate their use.

EPIDEMIOLOGY OF ENDEMIC TYPHUS FEVER IN THE SOUTHERN UNITED STATES*

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NEW ORLEANS

HISTORIC SKETCH

The recorded history of endemic typhus fever in the United States is restricted to the relatively short period of the last forty-

*Thesis winning the Walter Reed Memorial Medal of the Louisiana State Medical Society presented to a Senior student of the Tulane Medical School.

odd years, and in postulating its primary entrance into the United States it is necessary to consider the early history of epidemic, or old world typhus, in this country. The relationship of the two types has not been accurately determined, and the endemic variety has only recently come to be recognized as a disease entity. Nixon, in his "Century of Medicine in San Antonio", described a disease occurring in the Spanish occupation days of the late 18th century which could well have been, and most probably was, epidemic typhus. In 1836, there was an epidemic of typhus in Philadelphia, and it was there that Gerhard differentiated, both clinically and pathologically, between typhus and typhoid fever. One of the most widely accepted dates of primary entrance of classical typhus into the United States is 1846, shortly after a famine in Ireland, at which time Irish immigrants are said to have firmly established the disease in this country. The introduction of the disease into port cities along the southern Atlantic and Gulf coasts may have been from Europe, as well as from Latin America.

Since 1892, typhus fever in the United States has been mainly of the endemic variety. In that year the last epidemic occurred in New York and eight of the twelve attending doctors at Bellevue Hospital contracted the disease and died. In 1910, Nathan E. Brill, of New York, called attention to a disease clinically resembling typhoid fever, but without the positive Widal reaction. He hesitated to identify it as typhus because of its generally milder course, and its occurrence under circumstances which were different from those usually associated with the disease. He accordingly believed that he was dealing with a new clinical entity, "an infectious disease of unknown etiology." From the description of the cases in Brill's original article, and from subsequent findings, it appears that his cases were endemic typhus. In 1912, Anderson and Goldberger were successful in the inoculation of monkeys with blood from a case of Brill's disease, and they found that, as in Mexican typhus, one infection rendered the monkeys

immune to subsequent inoculations of the same passage virus. Furthermore, monkeys previously infected with Mexican typhus were thereafter immune to Brill's disease, and vice versa. These observations were later confirmed, and it was concluded that Brill's disease was identical with typhus fever.

A conspicuous landmark in the modern history of the disease was the work of K. F. Maxcy, who in 1926 established the fact that endemic typhus was not associated with lice, and suggested that there was a rodent reservoir for the disease, a rat ectoparasite being the vector. This work was actually confirmed by R. E. Dyer, in 1931, who showed that the rat flea, *Xenopsylla cheopis*, could carry the etiologic agent of endemic typhus; in 1932, Dyer demonstrated that the multiplication of the virus took place in the flea, and that the flea was not simply a mechanical vector. Since Brill's original article, murine typhus has been shown by numerous investigations to be a widespread disease, increasing in incidence and thus a major health problem.

It is of interest to mention the work of Hans Zinsser who, in 1934, stated that having investigated over five hundred cases of Brill's disease in New York and Boston, was forced to the conclusion that the disease was an imported form of the classical European typhus fever. He concluded that the cases observed represented recrudescences of old infections originally acquired in European foci as much as 25 or 30 years before. The view implies the premise that the etiologic agent, once acquired, remains latent for many years in infected individuals, and may become active in these persons under conditions of fading immunity. Today, relatively few of those studying typhus fever accept Zinsser's views, and the ultimate solution of this question awaits a more thorough study of cases in the New England States, especially as to their occurrence in native born Americans.

THEORIES OF CONTINUANCE

In the past several years much has been written and many ideas have been ex-

pressed in an attempt to explain successfully the continuance and spread of typhus fever. At the present time there are two theories which have major support. One theory holds that epidemic and endemic typhus are separate and distinct, and that neither depends upon the other for perpetuation. This conclusion would imply that, regarding the epidemic variety, there are present continuously, mild and unrecognized but probably louse-transmitted cases which serve as starting points for epidemics when crowding and filth are of a sufficiently high degree. This theory would necessarily mean that the endemic variety exists as a separate disease which never becomes conspicuous except under heavy rat and flea concentrations, with a concurrent infection of the rats with rat typhus. Cases of the murine variety among human beings would then be mere incidents in the history of a rat disease, and would have no part in the formation of classical epidemics since fleas are not believed to transmit the disease from man to man. The other theory attempting to relate the two diseases is, that typhus is a disease of rats which is occasionally passed to man by rat fleas; that when such flea-transmitted cases occur among people who are louse-infested and of low economic standard, the disease may become epidemic in character by establishing the louse-cycle transmission. It is not known at the present time which theory is true; however, evidence has accumulated which tends to support the last mentioned theory.

ECOLOGY

The causative agent of epidemic typhus has been shown to be *Rickettsia prowazeki*, first described by Ricketts in 1910, and named by da Rocha-Lima in 1916. Extensive studies by Mooser and others have revealed the association of such *Rickettsia* with endemic typhus fever.

In the scale of microorganisms, *Rickettsia* are separate from bacteria, on the one hand, and viruses on the other. The *Rickettsia*, often improperly referred to as "virus", are pleomorphic microorganisms, usually seen in short bacillary or diplo-bacillus form, which may look like minute coccobacilli or

appear as longer, straight or curved filaments which approach in size the smaller bacteria. The *Rickettsia* are non-motile, and are well stained by Geimsa's stain, taking on a faint purplish tinge. Repeated experimentation has shown they cannot be successfully cultivated outside of the body except in tissue cultures containing living cells, and that in the body of the host they grow intracellularly. Up to the present time, many of the authorities have felt that it was reasonable to assume that, as a class, *Rickettsia* were originally insect parasites which came to mammals, and eventually to man, through the mediation of blood sucking insect vectors.

In 1931, Dyer and later others, reported in detail the successful experimental transmission of endemic typhus from rat to rat by means of the tropical rat flea, *Xenopsylla cheopis*. As has been shown by Ewing, this flea occurs not only at seaports in the United States, as in Savannah and New Orleans, but also in the Northern and inland States. *Xenopsylla cheopis* serves as a suitable vector, for it can live for forty days or longer when its food supply is derived from a rat, and more than thirty days when fed on human blood. Chick and Martin concluded from their experiments that this flea is the main species which when hungry readily bites man. This is important since Fox observed that the marked increase in fleas per rat recorded in the autumn months, is altogether made up of an increase in this flea which so readily acts as a good vector. The failure to recover the typhus *Rickettsia* from fleas, hatched from eggs of typhus-infected fleas, suggests that the probable mechanism by which the flea transmits typhus is directly from rat to man, through the scratching or rubbing of infected flea feces into the skin. This is supported by the work of Mooser and Castañeda who found that the salivary glands and ducts, and the reproductive organs were free of *Rickettsia*, explaining the failure of earlier efforts to transmit typhus by the bite of infected fleas. Nicolle and others have suggested that *Rickettsia prowazeki* may be passed out in the dejecta of the flea, and in

the urine of rats and other animals, causing contamination of food and the production of the disease when such food is eaten. The exact route of the infection is not known, but this is of little importance since we know the flea is the chief offender. The *Rickettsia* are relatively long lived within the infected flea, having been shown to be virulent for at least fifty days after the last infective feeding. In considering other vectors in the rat to rat transmission, it was shown that another flea, *Ceratophyllus fasciatus*, transmitted the disease experimentally. The rat mite, *Liponyssus bacoti*, has been suggested as a vector of the disease, and also the rat louse *Polyplax spinulosus* has been found infected. With the exception of *Xenopsylla cheopis* the several vectors studied in the laboratory seem of little actual importance. *Polyplax spinulosus*, important in spreading the disease from rat to rat is not important for transmission to man since lice are notably host specific. Zinsser has shown that the typhus *Rickettsia* will remain alive in the tick, but this, as other possible vectors, such as the chicken flea, remain secondary in importance to the tropical rat flea.

Although a number of wild rodents, namely, the woodchuck, house mouse, meadow mouse and the white footed mouse, can serve as reservoir hosts, the most important at present is the brown rat, *Rattus norvegicus*.

PREVALENCE

From the very beginning of its history, workers with endemic typhus have repeatedly observed the summer and fall incidence of the disease, in direct contrast with the winter and spring incidence of epidemic typhus, this seasonal variation corresponding to the time when rat fleas are most prevalent in the southern United States. One of the most interesting phases of endemic typhus, and one as yet unexplained, is what appears at first to be a racial immunity for the negro, since the attack rate in the white population is from five to eight times greater than that in the colored population. This may be a real difference; however, it must be remembered that upon

the basis of medical neglect, as well as other factors, certainly many more cases are missed in the negro than in the white. Some postulate that this lower incidence is only a manifestation of acquired immunity from unrecognized cases which occur in childhood, these being known to be quite mild. The peak of incidence is attained at the 29-39 year period, and diminishes with age, but it is apparent that certainly there is no age immunity in this disease. Males have been shown to be attacked about twice as frequently as females, and this is most readily explained upon the basis of the greater chances of exposure in the male. The disease, an indoor disease, in shops, groceries, cafes, and warehouses, is chiefly observed in middle class workers, but is found in all levels of society.

Prior to 1931, recognition of endemic typhus by physicians was limited, and State Health Departments had only recently begun to employ the Weil-Felix reaction routinely on blood submitted for the diagnosis of febrile diseases.

In the past few years, there has been an increase in the frequency of recognition of this disease, and there is evidence that this is an actual increase in the number of cases. Musser stated that in 1937 only two cases were diagnosed in the Charity Hospital of New Orleans whereas two years later he personally saw 16 cases. This is true of the situation at many other hospitals in the Southern states, and certainly there is no reason to suppose that in those two years physicians suddenly acquired the ability to diagnose typhus fever.

In the past ten years, the number of cases in all affected states has consistently increased, with the exception of Virginia and Maryland, which reported a decrease; however, it is felt that this is due to the fact that before 1930 there was a failure to differentiate typhus from Rocky Mountain spotted fever in those two states, thus showing a false incidence now corrected (see table). There was a definite drop in 1934 and 1935 in the number of reported cases following rat extermination campaigns in Georgia, Alabama and Texas, and this also

NUMBER OF CASES OF ENDEMIC TYPHUS RECORDED WITH THE UNITED STATES PUBLIC HEALTH SERVICE, 1928 THROUGH 1941.

STATE	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41
North Carolina		3	16	6	24	46	23	51	33	70	89	122	65	77
South Carolina	1	5	22	13	24	54	38	57	57	101	146	232	132	105
Georgia	48	57	238	127	308	625	414	485	815	1046	956	1129	584	936
Florida	49	48	39	28	42	54	35	27	55	121	116	153	114	192
Tennessee	2	2		1	2	1		8	27	22	24	100	36	45
Alabama	59	72	67	80	239	823	287	294	369	480	353	472	289	299
Mississippi						1		5	6	15	25	49	51	81
Louisiana		1		1	17	11	18	20	12	23	27	117	118	193
Texas	5	8	13	43	227	398	496	276	327	453	497	538	410	733
Total in U. S. A.....	196	239	510	332	955	2069	1392	1287	1732	2393	2294	2998	1882	2780

suggests that the reported increases in the other years were not due entirely to increase in recognition. In regard to the drop in 1935, it is interesting to note that in 1934 there was also a decrease in reported cases in North Carolina, South Carolina and Florida, so that other factors may have been partly responsible.

Public Health records have shown that 90 per cent of endemic typhus cases reported in this country occur in Alabama, Georgia, and Texas. The northern limit of the disease has been found to change year after year until at the present time the line is well above central Tennessee, and cases have been discovered much farther north.

The factors which cause and retard the spread of endemic typhus are not clear, but the common rat and the rat flea are certainly most important. The limits of the disease occurrence are more restricted than the distribution of the rodent, but the limiting factor may be the distribution of *Xenopsylla cheopis*. Fox noted that in Savannah, Georgia, the marked increase in fleas per rat in the autumn months is made up of an increase in this tropical rat flea which has proved to be such an efficient vector.

It is a well known principle in epidemiology that there must be the right combination of "seed," "sower," and "soil" for a disease to appear, and certainly many factors such as numbers of vectors, reservoir hosts, and climate, make conditions more suitable for the endemicity of the disease in the Southern states.

To support this, Fox showed *Xenopsylla cheopis* to be the predominant rat flea pres-

ent during every month of the year in New Orleans, while in Northern cities the flea appeared in greater numbers only during a few months of the year. He also found that in New Orleans the average number of fleas per rat was consistently high, as compared with average numbers in New York and Boston. It is also felt that temperature and humidity of the Southern states are more ideal, and are important factors in the average numbers of fleas per rat. Survey of early Annual Reports of the Surgeon General of the United States Public Health Service suggest a gradual increase in the average number of fleas per rat but this information is incomplete and the subject awaits further study, such as that being begun in New Orleans, before one might correlate this increase with that of reported typhus fever. In considering the distribution of murine typhus in the general population, it has been shown to be chiefly a disease of small villages and towns with a questionable tendency to spread from urban to rural areas. This rural spread is possibly explained by increasing acreage planted in food crops in the Southern states, and increasing storage of food stuffs on the farms, which was seen to a much less extent prior to 1929.

Before 1930, Alabama appears to have had the most extensive continuously endemic area, but since that time the area of greatest incidence has become continuous with strips extending westward to join the Texas area, southward into Florida, and a broad strip of counties extending through Georgia and the Carolinas. An increase in rat population has been noted in numerous places coincident with the appearance or

increase of typhus, and it is felt that the relatively recent increase in truck transportation has greatly facilitated the spread of the rodents, consequently their disease. The direct migration of rats from town to town along highways and through the fields is a slower process, but undoubtedly occurs, and furnishes an opportunity for the field mice and other susceptible rodents to become reservoirs of the disease.

PREVENTION

This *Rickettsial* disease presents many theoretical and practical problems which makes it one of the most complex of the infectious diseases of man. Endemic typhus presents problems of prevention and control because of the many possible vectors and reservoirs for the *Rickettsia*. The chief focus of preventive methods is naturally directed toward the elimination of the *Rickettsia* by destroying the rodents that harbor the microorganisms and nurture the vectors. Accumulated data indicate that complete eradication of reservoir hosts is not necessary and that moderate control of rats will result in the control of endemic typhus. As in the control of any disease, sufficient epidemiologic investigation is necessary, with this, education is most important to secure the interest and confidence of the people. With proper publicity, public enthusiasm may reach a point to initiate the adequate garbage removal and clean up the premises. It is necessary to remove rat harborage, such as trash heaps, before beginning the rat extermination program in areas known to be foci from previous investigation. Red squill is widely used in combination with fresh hamburger, and the poisonous bait is placed in rat runs, burrows, or in areas known to be infested. Rat proofing is the final, and of course the only permanent measure of protection. This involves the separation of rat and man, and applied to buildings, rat proofing consists of eliminating the ingress or egress ports of rats, or the enclosed spaces that might serve as sites for hiding or nesting. A second choice is vent stoppage which involves the closure of all outside openings that allow rats into buildings, and the utilization

of poisoning or trapping to eliminate the rats blocked in the building following the stoppage of all sites of exit.

With rare exception, typhus produces in the affected individual a lasting immunity, and numerous efforts to confer artificially such an immunity have been made. The first efforts were made with live *Rickettsia*, combined with live *Rickettsia*-convalescent serum, but these failed. Since the mixture could not be satisfactorily titrated, some of the reactions were far too severe to justify the use of living vaccines as a prophylactic measure in non-epidemic periods. The greatest success has been with killed vaccines, the chief difficulty thus far being to secure a sufficient quantity of a potent vaccine. In recent months, great strides have been made in the tissue culture of the *Rickettsia*, some of the most prominent work being done by Castañeda and by Cox. The former has produced a vaccine from the lungs of infected animals which he has shown to produce immunity in human beings, and the latter has produced a potent vaccine made from *Rickettsia* developed in large numbers in the yolk sac of the embryonic chick. The Cox vaccine is at the present time being administered extensively, but along with other vaccines awaits trial before worthwhile conclusions can be drawn as to its ultimate value.

SUMMARY AND CONCLUSION

While the origin of endemic typhus fever in the United States is a matter of speculation, it is known to be continued in rats and spread by rat fleas, from rat to rat and occasionally to man. It is not known whether a patient with endemic typhus may start a louse born epidemic. Only within the last few decades has endemic or murine typhus come to be recognized as a disease entity, related, if not identical, to Brill's disease. The brown rat and the tropical rat flea are mainly responsible for the extension of the disease, although several other potential rodent reservoirs and suitable vectors exist.

Within the last 15 years, the incidence of typhus fever in the Atlantic and Gulf states has increased. Nearly 60 per cent of the counties in these states reported cases since

1922, and of eight Southern states, South Carolina is the only state which did not show a rise in 1941, over the previous year. The fact that endemic typhus has increased in incidence and appeared in new cities far from its earlier habitat, indicates its increasing importance as a public health problem; thus rat control becomes of paramount importance. The danger of the extension of endemic typhus northward to the larger cities where the louse is more common, is not a theoretical one. Louse-borne typhus is not a danger at the present time, as long as the economic and thus sanitary status of our city and rural population is maintained. At the present time it should be remembered that throughout the centuries, the disease has been associated with war, famine, economic stress, and a break down of the sanitary dam built against all diseases, especially typhus fever.

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A CLINICO-PATHOLOGIC STUDY OF RHEUMATIC FEVER AND RHEU- MATIC HEART DISEASE IN THE WHITE AND NEGRO RACES

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In the past, investigations^{1, 2} have disclosed the greater prevalence of organic heart disease in the negro as compared to the white race. Many authorities^{3, 4, 5} have statistically demonstrated that the mortality rate from heart disease in the negro is markedly higher than in the white. It is also a well known observation by physicians who see large numbers of colored patients that morbidity from heart disease is greater in these patients. Negro cardinals, like negro diabetics⁶ tend to die at an earlier age than white patients who have similar diagnoses.

It is accepted by most clinicians that the three chief etiologic causes of heart disease in the negro race are hypertension, arteriosclerosis and syphilis. Because of the relative rarity of rheumatic heart disease in the South the statistical surveys of the etiology of organic heart disease differ from those of other parts of the United States. In the consideration of comparative surveys of organic heart disease in the negro

and the white races, hypertension, arteriosclerosis,⁷ syphilis,¹² and coronary⁸ occlusion have been dealt with in detail. However, discussion of rheumatic fever as an etiologic cause of organic heart disease has been limited in the majority of articles, because the number of patients in most series^{1, 2} suffering from this type of heart disease was too small to justify conclusions regarding the influence of race on the morbidity or mortality of this etiologic type. On the other hand other authors have felt that the negro possesses a certain degree of racial immunity, to explain the lower incidence of rheumatic fever in negroes reported in this series. Houston,⁹ in an analysis of all cases of rheumatic fever admitted to Charity Hospital over the period January 1, 1922-1926, found 88 cases in 115,213 admissions. Thirty-nine per cent of these were colored, and 61 per cent were white. However, he noted that the clinical severity of the disease was no less in the negro than in the white. Wood¹⁰ et al. studied the incidence of rheumatic heart disease in a hospital where negro admissions comprised one-third of the total. They were able to find 12 colored patients suffering from rheumatic fever in a total of 177 cases. Laws⁷, in a survey of 438 patients, found that rheumatic heart disease comprised only 4.3 per cent of all organic heart disease in the white. Hedley,¹¹ in a study of heart disease in the hospitals of Washington, D. C., found that rheumatic heart disease caused 17 per cent of the deaths from heart disease in white patients and only 8.3 per cent of the cardiac deaths in the negro. He concluded that this ratio corroborated the general observation that rheumatic heart disease is more common in the white race.

Stone and Vanzant,⁵ in a survey of heart disease in a hospital in Galveston, Texas, found that 77.6 per cent of rheumatic heart disease occurred in white persons, while 22.4 per cent occurred in negroes. They concluded that the negro was less susceptible to rheumatic heart disease.

Gager and Dunn,¹² in a study of 1200 unselected cases of structural heart disease in the District of Columbia, found that rheu-

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matic heart disease was somewhat more prevalent in the white race, being 7.2 per cent of all organic heart disease as against 4.7 per cent of the total in the negro.

This conception did not coincide with our impression gained in observing patients in the clinics and wards of Charity Hospital. Therefore, we felt that survey of clinical data and autopsy material from a large southern hospital would throw light on this subject. Charity Hospital affords an ideal opportunity for the analysis of such a problem since the ratio of white and negro admissions is almost one to one.

The material for this study was obtained from an analysis of the discharge diagnoses of 187,987 patients during the period January 1, 1939 through 1941. The autopsy data were derived from postmortem in the interval 1927 through 1941. In this period there was a total of 16,121 necropsies.

Chart 1.

TOTAL HOSPITAL ADMISSIONS*

	White	Colored
1939	33,621	28,235
1940	33,797	32,473
1941	27,742	32,119
TOTAL	95,160	92,827
	92,827	
	187,987	

*Figures supplied by Charity Hospital.

Total autopsies.

From 1927-1941, 16,121.

Harrison and Levine,¹³ in their study of the regional distribution of rheumatic fever and rheumatic heart disease in the United States, found that from the interval 1916-1923 inclusive, a total of 53,057 patients were admitted to the Charity Hospital in New Orleans. Among these 149 cases were listed as rheumatic fever.

We have been able to accumulate 150 cases of acute rheumatic fever in the interval 1939-1941, from a total of 187,987 admissions, an incidence of 0.08 per cent (see charts 1 and 2). In this period we had a combined total of 875 cases of acute rheumatic fever and rheumatic heart disease, active and inactive. Thus acute rheumatic fever was only 17 per cent of all cases of rheumatic infection admitted to Charity Hospital.

Forty-four per cent of the 150 cases of acute rheumatic fever were negro and 56 per cent were white. In this group there were three white and three negro deaths. The average age of whites with acute rheumatic fever was 16 1/3 years and the average age of negroes admitted in the acute stage was 18 1/3 years.

In the same interval a diagnosis of rheumatic heart disease was made in 725 instances (chart 3). Three hundred seventy-four cases, or 51 per cent, occurred in the white race; 351 cases, or 49 per cent, occurred in the negro. Three hundred eighteen patients suffered from active rheumatic heart disease. These showed an equal distribution, there being 159 cases in the negro and 159 cases in the white. Cases of inactive rheumatic heart disease composed a total of 407 patients. Of these 215 or 52.5 per cent were white, and 192 or 47.5 per cent were colored.

Our figures would then indicate that at least in New Orleans, there is no significant racial difference in the incidence of acute rheumatic fever and rheumatic heart disease.

The total number of cases of rheumatic carditis was 725, showing an overwhelming preponderance of carditis in this series.

Chart 2.

ACUTE RHEUMATIC FEVER*

	White			Colored		
	No. of Cases	Deaths	Av. Age	No. of Cases	Deaths	Av. Age
1939	19	0	17	20	1	18
1940	42	3	16	28	2	20
1941	23	0	16	18	0	17
	84—56%			66—44%		
				84		
				150		

Chart 3.
RHEUMATIC HEART DISEASE ACTIVE*

	White			Colored		
	No. of Cases	Deaths	Av. Age	No. of Cases	Deaths	Av. Age
1939	53	11	26	45	4	27
1940	61	6	22	51	9	24
1941	45	8	25	63	6	22
	159—50%			159—50%		
	159					
	318					
	White			Colored		
	No. of Cases	Deaths	Av. Age	No. of Cases	Deaths	Av. Age
1931	57	11	31	54	11	30
1940	72	10		65	7	29
1941	86	15		73	7	26
	215—52.8%			192—47.2%		
	192					
	407					

*Figures supplied by Charity Hospital.

This disparity¹⁴ has been commented upon by other authors.⁵ It would appear then, that acute rheumatic fever in the South does not have the typical characteristics of the northern disease. We feel that the rheumatic state in the South is a chronic systemic disease often of an insidious onset with relatively mild exacerbations, but which nevertheless follows a progressive course to a deforming valvulitis and cardiac failure.

AUTOPSY DATA

In the interval, January 1, 1927 through 1941, there were a total of 16,121 postmortems at Charity Hospital. In this period we were able to find 102 cases of rheumatic heart disease. Of the 102 autopsy cases, 46 were white and 56 were colored. It is interesting that no white person under the age of 10 who came to autopsy in this period showed evidences of rheumatic heart disease. On the other hand, two negro males and six negro females under ten years had anatomic lesions consistent with this diagnosis. Thirty-four of the 56 colored patients showing rheumatic heart disease at necropsy were under 40 years of age, while only 15 out of 86 whites were in this age group.

The distribution of the valvular lesions was not remarkable. In 45, or 46 per cent, of the autopsied cases the mitral valve alone

was involved. The aortic valve showed rheumatic lesions in nine cases or 8.8 per cent; combined lesions involving the aortic and mitral valves occurred in 37 individuals or 34.3 per cent. In two instances both the mitral and tricuspid valves were involved, and in one case the pathologic changes were in the mitral, tricuspid and pulmonary valves.

An interesting observation was that there were eight cases which presented associated luetic cardiovascular disease. All of these occurred in colored patients. Five or 4.9 per cent of these patients had a definite syphilitic aortitis. The three others, or 2.9 per cent had an aortic regurgitation as a result of luetic involvement of the valve cusps. The majority of these patients had been diagnosed as luetic heart disease clinically. The average age of this group was 46 years, two were females and the remainder males. White¹⁵ states that luetic aortitis complicated less than 1 per cent of the patients in his series. Our figures of 4.9 per cent can be explained by the fact that negroes composed over 50 per cent of our cases. There were 19 instances in the autopsy series with pericardial involvement of which 11 were varying degrees of adhesive pericarditis.

Coronary occlusion was found in six cases. The average age of this group was 51.6 years. Three of the patients were white

females, two were white males and one a colored male 36 years old in whom the occlusion was due to an associated syphilitic aortitis.

There were 16 instances of infarction of the lung, 15 renal, six splenic, three hepatic and two cases of cerebral infarction. These figures do not include the cases of bacterial endocarditis which showed multiple embolic lesions.

In view of the fact that there is evidence to show that the hemolytic streptococcus is of etiologic significance in both rheumatic fever and glomerulonephritis we were interested in determining their co-existence in the autopsy series. Of the 102 cases there were two instances of acute glomerulonephritis, one of which occurred in a 25 year old white male with a well established mitral stenosis. The other was the case of an 11 year old white male who was experiencing acute rheumatic fever in the classical sense. There was one case of subacute glomerular nephritis in an 18 year old female with gonococcal septicemia. In addition three of the cases showed pathology consistent with the diagnosis of chronic glomerulonephritis. It is of interest to note that some observers^{16, 17} have felt that nephritis might be an expression of rheumatic fever. Wilson,¹⁸ however, feels that renal changes that have been described are forms of glomerulonephritis without peculiar characteristics. Apparently climate has no effect on the incidence of acute glomerulonephritis as has been claimed for other diseases attributed to the streptococcus.¹⁹

Cases have been described in which venous thrombosis has occurred associated with round cell infiltration of the vessel wall.²⁰ In our autopsy series there were six cases complicated with thrombosis. Five were observed in old rheumatics. One was seen in the acute stage and presented thrombosis of the right jugular vein. The other sites of thromboses were the left common iliac in one instance, and the left subclavian axillary and internal jugular vein. There were two cases of thrombosis of the pulmonary artery, one of which was associated with thrombosis of the right renal artery.

All of these latter patients were white and thus we exclude the possibility of sickle cell anemia.

In the 102 proved cases of rheumatic heart disease which came to autopsy there were seven cases of subacute bacterial endocarditis and two cases of acute ulcerative endocarditis, one of which was due to gonococcal septicemia. Three of the cases with subacute bacterial endocarditis were colored, the other patients were white. The average age of these colored patients was 17.3 years. The average age of the white patients was 38.6 years. In view of the small number of patients this certainly does not indicate the true age incidence of these complications but it is worthy of note.

SUMMARY

A study of the discharge diagnoses of 187,987 case histories in the three-year period, 1939 through 1941, revealed 150 cases of acute rheumatic fever, an incidence of 0.08 per cent. Forty-four per cent of these were negro and 56 per cent were white. In this interval there were 725 instances of rheumatic heart disease. Fifty-one per cent of these occurred in the white race, 49 per cent in the colored. There was no appreciable racial difference in active and inactive rheumatic heart disease.

Autopsy data obtained from 16,121 post-mortems were studied. In the 102 cases of rheumatic heart disease found, 46 were white and 56 were colored. These statistics suggest that negro patients suffering from rheumatic heart disease tend to die at an earlier age than do the white patients.

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SOME COMMENTS ON THE MEDICAL HISTORY OF LOUISIANA AS TAUGHT IN THE PUBLIC SCHOOLS

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At this time, when the free textbooks officially supplied by the State are being distributed to the pupils of the public schools, it would seem opportune to direct the attention of the Department of Education to, at least, some gross misstatements of facts in the official history of Louisiana which are of special concern to the medical profession. The book in question is "The Story of Louisiana," a textbook for the public schools by William O. Scroggs, sometime professor in the Louisiana State University, published by Bobbs-Merrill Company, Indianapolis, Indiana.

It is intended for students of the sixth grade, and came into existence in 1924, eighteen years ago, in the first year of Governor Fuqua's administration, and has seemingly continued as the official textbook on the history of Louisiana ever since. According to the preface, the book was "completely revised" and brought to date

in 1936, the first year of the administration of Governor R. W. Leche. While this history was no doubt liberally revised and much improved in 1936, it has apparently undergone no appreciable changes or additions in the intervening and most significant six years (1936-1942). Even in the "revised" edition of 1936, there are some omissions that would seem inexplicable in the light of their importance, for instance, the death of Governor, at that time Senator, Huey P. Long, which occurred on September 10, 1935, is nowhere mentioned or the date recorded. However evident it may be that this history is in urgent need of revision if it is to be brought up to the level of contemporary history, it is my purpose to confine my commentaries and criticisms to the errors and misstatements which appear in the 52nd Chapter (the revised edition) under the title "Recent History" and "Spanish American War" (pp. 294-295) in which the epochal discovery of the transmission of yellow fever by the mosquito is briefly referred to and described.

I quote: "The (Spanish American) war lasted only four months, and none of the Louisiana volunteers took part in the fighting. Nevertheless, the conflict had important results for Louisiana and the other Southern States. While American troops occupied Havana, that city got a thorough cleaning, perhaps for the first time in its history, and was practically freed of yellow fever. It was mainly from Havana that yellow fever had been brought so often to the United States. Now the terrible disease was no longer a danger to this country.

"While they were stationed in Cuba, American physicians had a better opportunity to study the causes of yellow fever. They finally proved, after many experiments, that it was spread by a variety of mosquito. The discovery of the cause of the fever made it fairly easy to stamp it out. There are now only a few remote spots in the world where it still persists.

"When the health officers were making their tests in order to find out the cause of the disease one of their number, Doctor Walter Reed, volunteered to be bitten by a

mosquito which had previously bitten a fever patient. He contracted the disease and died, but in his death he rendered a great service to his fellow man. Louisiana, which was formerly so often scourged by this dread malady, owes a great debt to his memory."

COMMENTARIES ON PARAGRAPHS I AND II:

These statements would make it appear that Havana had been purified and freed from yellow fever by the drastic methods of municipal cleaning that General (then Major) Gorgas, Chief Sanitary Director of the Army of Occupation in Cuba, had put into practice in 1898-1899. It is true that by almost super-human efforts he had converted what was known as the "cesspool" of the Tropics into a "spotless town," the cleanest in the West Indies.

"At the end of several months of scrubbing, burning and disinfection Havana emerged something new in the history of the world." For the time being, the prevalence of yellow fever and the general mortality rate was reduced and the origin of yellow fever in filth and its control by cleanliness seemed demonstrated, with victory over Yellow Jack assured.

This triumph, however, was very short lived, for with the restoration of peace and order under the American government and the lifting of the war blockade, a great wave of native Spanish non-immune immigrants poured into Cuba, chiefly through Havana, (over 12,000 admitted between August 1 and December, 1899). Immediately the prevalence and mortality of yellow fever rose and soon attained widespread proportions, despite the drastic hygiene of Gorgas' efforts to convert Havana into a spotless town. Seldom has such a superhuman task as that accomplished by Gorgas been so inadequately rewarded. For all his labor did not have the slightest effect in preventing the disease at which it was chiefly aimed. Gorgas, himself, wrote to General Leonard Wood, "our sanitary measures for the preceding two years have been flat failures. Yellow fever at the beginning of 1901 is about as bad as it has ever been in Havana."

The "dirt" theory of yellow fever had been fully tested and fully disproved. The statement made in this official school book: "that this terrible disease was [in consequence of the cleaning of Havana] no longer a danger to this country," is not only misleading but positively untrue; for yellow fever in Havana was at its worst when cleanliness was at its best.^{1, 2, 3, 4}

COMMENTARIES ON PARAGRAPH III:

The author makes no mention of Dr. Carlos Finlay, the discoverer of the mosquito transmission of yellow fever,⁵⁻¹² or of the arrival and work of the Army Yellow Fever Commission headed by Walter Reed,¹³⁻¹⁸ appointed by Surgeon General Sternberg, with assistant surgeons, Jesse Lazear, James Carroll and Aristides Agramonte, to investigate and report on the origin and spread of yellow fever, with special reference to the claims made for the bacillus of Sanarelli as the specific cause of the disease. The textbook does not tell who the "American physicians" or "health officers" were who were making tests to find out the "cause" of the disease, and only mentions Dr. Walter Reed, "who volunteered to be bitten by a mosquito which had previously bitten a fever patient. He contracted the disease and died, but in his death he rendered a great service to his fellow man. Louisiana which was formerly so often scourged by this dread malady, owes a great debt to his memory."

The facts are: (1) That Dr. Walter Reed was never inoculated with infected yellow fever mosquitoes;^{8, 9, 14, 15} (2) that he never had yellow fever;^{14, 15} (3) that he was not in Havana at the time when the mosquito inoculations were inaugurated and his presence was most needed;^{8, 9, 14} (4) that he was called to the United States on August 4, 1900, four days after the first conference with Dr. Carlos Finlay, who gave him and his associates all the data in regard to the transmission of yellow fever by mosquitoes, which he had accumulated in the course of twenty years that he had developed and preached the doctrine of yellow fever transmission by mosquitoes;^{8, 9, 10, 14} (5) that Finlay gave the Commission the

ova and adult females of the *Culex* mosquito (later known as the *Stegomyia fasciata*, and now as the *Aedes aegypti*) which he had identified as the specific transmitter of the disease out of 600 different specimens of mosquitoes known to naturalists;^{2, 8, 9, 10, 14} (6) that from August 4 to October 11, 1900, the experimental study of the mosquito transmission of yellow fever was carried on in Dr. Reed's absence by Carroll, Lazear and Agramonte;^{8, 9, 10, 14} (7) that in consequence of the inoculations with infected mosquitoes, Carroll, sickened with yellow fever (August 27, 1900) and barely escaped with his life; Lazear, a firm believer in Finlay's teachings, was stung on September 13, 1900, and died on September 25, the first martyr of science in the field of honor; Agramonte, a native Cuban, was immune. In the course of these investigations, W. M. Dean, an incredulous soldier, who volunteered for infected mosquito inoculation (August 31, 1900) developed a typical and severe attack of yellow fever five days after he had been purposely stung with a yellow fever mosquito. While Carroll was still ill from his attack, Lazear and Agramonte cabled Walter Reed in Washington to announce that in their opinion the mosquito transmission of yellow fever, which they had looked upon with so much skepticism, was now proved true.^{14, 16} When Reed returned to Cuba on October 11, 1900, he prepared a brief but world echoing preliminary report of the work of his commission at the American Public Health Association at Indianapolis, October 24, 1900. Later, he published an "additional report" in February, 1901, which completely confirmed the truth of Finlay's discovery and opened the way to Gorgas' antimosquito campaign which began on February 12, 1901, and ended in the complete extinction of yellow fever in 1902. Reed, covered with glory, returned to Washington in February, 1901, after completing the experimental work inaugurated by his associates Lazear, Carroll and Agramonte. Greatly honored and enjoying a just prestige, he continued to teach at the Army Medical School until November 17, 1902, when he was

stricken with acute appendicitis, from which he succumbed five days later after an operation.^{2, 13, 14, 16, 17}

By the application of Finlay's principles of mosquito extermination, so brilliantly confirmed by the Reed commission, and so successfully applied by Gorgas in Havana, New Orleans was delivered from yellow fever in 1905, and has remained free from its nefarious visitations ever since.^{18, 19, 20}

The preceding statement of facts regarding the conquest of yellow fever in Cuba and the respective role of Finlay, Reed and Gorgas is based on data from authentic sources quoted in the appended references.

In passing, we should also mention the need of correcting the statement in paragraph two, quoted above, "There are now only a few remote spots in the world where it still persists." This applied to conditions 18 years ago, but is now incorrect in the light of new knowledge, for yellow fever is now known to exist in new areas, previously unsuspected, in the jungles of South America, in Brazil, Colombia and the whole of the Amazon Valley, as well as in the jungles of East and West Africa. The recently acquired knowledge of yellow fever in these countries is of great importance on account of the danger of the disease being transmitted across great areas by widespread aerial travel. It has been necessary completely to revise our laws of quarantine as applied to aviation. Methods for the careful disinfection of airplanes have been developed for the destruction of mosquitoes and other insects with culecides and other insect vectors of infectious diseases. Such facts as these show the importance of a new edition which could also include a mention of vaccination as a means of preventing yellow fever, which is now being applied through the generosity of the Rockefeller Foundation and other sanitary agencies in British, Belgian and French Africa. Vaccination against yellow fever is also being extensively used on our troops embarking for various fronts, as a protection against these infections in foreign lands.

It is only fair to mention that one line meets with our hearty approval and praise,

"Medical Science has made Louisiana a healthier place to live in," which appears on page 329. Also, we heartily approve the praise given to Dr. James W. Dupree of Baton Rouge (page 295), for his pioneer researches on the mosquito in relation to yellow fever. He was at one time president of the Louisiana State Medical Society.

While a detailed story of a great medical achievement, even though of epochal importance to this state, is not expected in a school book of this elementary type, a total misstatement of facts, as in the case of Walter Reed, is indeed deplorable, and scarcely excusable, since the true story was well known and universally accessible twenty years before the book was published in 1924.

Is it surprising, in view of the apparent ignorance and seeming indifference to historic truth displayed in a book officially designed by the State for the instruction of the youth in the public schools, that the public at large, and even the medical profession, should be so woefully deficient in the appreciation of the heroes of the conquest of yellow fever, the greatest achievement of medical science for the welfare of the people, in the history of our State?

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EXPERIENCE IN SELECTIVE SERVICE WORK*

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Out of the first 2,000,000 men who were examined through the Selective Service System and the Army Induction Boards, 900,000 walked away rejected as unfit. This fact was termed by our President "an indictment of America."¹ We cannot be proud of our unfit men, but we can be proud of having the healthiest and best Army in the world, and that is what careful selection is accomplishing. Nevertheless, our standards of excellence are not too high. Even before Pearl Harbor our large army hospitals were loaded with sick men, and in one of the military centers in Louisiana there were over 8,000 hospital admissions before December 1941. At that center 2 per cent of the entire force were released from the service on account of physical or mental defects.²

The purpose of this paper is to present the neuropsychiatric aspects of selection as we have encountered them in our work with the Medical Advisory Board of the Selec-

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tive Service System. As you know, Medical Advisory Boards were set up in order to aid Local Boards in deciding upon doubtful cases. There are 640 advisory boards in the country, approximately one for each ten local boards. Utilization of psychiatrists on the advisory boards allows for much more thorough examination of selectees because these examiners are more experienced in detecting personality disorders. It is known that selectees taken into the Army of the United States through the Selective Service System have made a better showing as far as the rate of discharge from the army is concerned than have the Regular Army enlistees, or National Guardsmen. It is hoped that recent efforts^{3, 27} to speed up induction by relying less on Selective Service and more upon the Army Induction Boards will not result in any lowering of the effectiveness of selection.

PAST EXPERIENCE

We learned many lessons about psychiatry from the last war, and we hope to be able to utilize them now. We know that our Veterans' Bureau Hospitals are populated to the extent of 50 per cent with psychiatric casualties, and that to date the care of these cases has cost the Government one billion dollars, or thirty thousand dollars per casualty.^{4, 18} Most of these men had the symptoms of their illness prior to induction and could have been diagnosed before becoming attached to the service. In the case of the psychoneurotics 95 per cent admitted having symptoms before induction according to Cooley of the Veteran's Administration.¹⁸

What type of men develop these expensive chronic psychiatric disabilities? It is true that given sufficient emotional stress, neurotic symptoms may appear in almost anyone. Sometimes a whole battalion under shell fire showed hysterical fits and vomiting.⁵ But we must differentiate between the neurotic symptom and the psychoneurotic personality if we are to recognize the potentially chronic cases. Psychoneurotic symptoms when seen in the normal are minor acute reactions, and do not persist, whereas in the neurotic per-

sonality they persist long after the situation producing them has subsided. By taking an adequate history the necessary determinants of the personality can be made. In the neurotic veterans, symptoms were present before the war, were exaggerated by the war, and continued to progress in severity after the war.

We know from past experience that men who have had psychoses cannot be considered good risks and must be automatically rejected.¹⁸ A more difficult task, however, is one which was hardly touched in the last war, and that is the recognition of those individuals who are destined to become psychotic as a result of army service, without having had any previous nervous breakdown. These individuals, the schizoids, the cyclothymes, and some of the psychopaths and neurotics have varying types of personalities. The schizoid is probably the most fragile in the war situation. One authority describes the basic personality structure which is apt to be chronically affected by war as being characterized by selfishness, over-conscientiousness, lack of sociability, and lack of affection for relatives and friends.⁵ To this personality, combat duty which exposes him to danger and death, constitutes more than anything else a threat to his excessive self love, and under stress he regresses to a state of infantile helplessness.

Soldiers showing previous anxiety symptoms, sensitiveness, timorousness, or those giving a history of phobias, were as a rule unable to stand the stress of war, whereas some obsessionals, psychopaths, and mental defectives did well in combat although they frequently broke down upon returning to civilian life.⁵

The psychopathic personality, previously called the constitutional psychopathic inferior, deserves considerable attention. These socially maladjusted persons, though sometimes very aggressive fighters, could not be depended upon, were a constant source of annoyance and trouble, disrupted morale, and even at times spread enemy propaganda. While not suffering from outstanding mental symptoms, their condition

caused serious difficulties with others. As a result of their personality deviation, many developed disabling neurotic symptoms or psychoses. According to Roscoe Hall,^{4, 11} "The psychopaths are the hardest group to recognize and the most injurious to discipline if admitted to the armed forces. It is imperative to examine the personal history of the psychopath to insure his detection before induction." As he says "Past performance is no less important in psychiatric examination than it is in horse racing."

The psychopaths have always been recognized by the line officers of the Army as undesirables, but they usually had to be hospitalized before they would be considered mental cases.⁸ For as Dunn²⁶ states in his excellent article, "Ordinarily the psychopath shows none of the usual neurotic symptoms. Furthermore, this acting out very frequently produces suffering or unhappiness for those in his environment with very little conflict, guilt-feeling or suffering for himself. This is very much in contrast to the usual neurotic's reaction."

The psychopath is always making a new adjustment but never finds satisfaction. He wants to lead his own life but cannot accomplish this without coming in conflict with others. They are the "ne'er-do-wells," and in the last war the draft boards swept them into the Army on the theory it would "make men out of them."

Baillie,⁸ in Canada, recently studied 200 soldiers hospitalized as neuropsychiatric admissions, including 70 psychopaths, 32 mental defectives, and 17 psychoneurotics. Only four of the psychopaths could be allowed to go back to combat duty. He believes that far more of these unsuitable persons could be eliminated.

The best experience of the past might be summed up by Marshal Foch's answer to the question of what makes a good soldier. His answer was that a good soldier is one who has the qualities that make a good citizen.

DISCUSSION OF CASES

The examiners of selectees are faced with the unique problem of finding illness in

people who may present no complaints at all. Of course the persons are studied in the usual manner, but the goal is entirely different than in the practice of therapeutics. The tendency to be callous of the individual's feelings has to be guarded against. Since the reports are seen by the selectee, definite diagnoses are often substituted by carefully worded statements which would not result in too much embarrassment. However, we keep our own files of findings and diagnoses.

We have reviewed the 52 cases referred to us between November 1940, and January 1942; all cases coming from seven local boards, mostly in the uptown section of New Orleans, to Medical Advisory Board No. 2. Many of the referrals were from other members of the Advisory Board, with an especially large number from the cardiologist. Fifty of the cases were psychiatric problems. A complete physical and neurological examination was done on each case, in addition to the careful evaluation of the personality factors. In order to make a complete study of all doubtful or unusual cases, Miss Marion Font, psychologist for the Hutchinson Memorial Clinic, supplemented our own studies with either routine or special psychologic testings in 37 cases.

Of the 50 psychiatric cases, two were qualified for the service, one of these for limited service only as 1-B. These two men had a good sense of responsibility, were sincere, interested, and had been making their own living. One had a good record in the C. C. C. camp and was a player on the baseball team. He had been referred because of tremor of the hands which did not interfere with his activities.

Of the 48 men rejected, there were two mental defectives, seven psychopaths, two with major abnormalities of mood (depressions), 17 psychoneurotic disorders, 13 with schizophrenia, one chronic alcoholic, and six epileptics. We see that the psychoneurotics head the list just as might be expected in an ordinary clinic or office practice. Of these there were six hypochondriacs, including two post-traumatic neuroses, two with "effort syndrome," one

with constant head pain, and one whose complaints were essentially gastrointestinal; there were two neurasthenics, three anxiety states, one severe stutterer, one hysteric. The 13 schizophrenics included four with frank psychoses, four who had a previous psychoses with more or less residual, and five cases showing strong schizophrenic potentialities. There were seven psychopathic personalities, four of whom were rejected because of homosexuality. There were six epileptics, one of whom was badly deteriorated. It is interesting that there was only one chronic alcoholic in the total of 48 psychiatric cases.

The intelligence of the 37 men who were tested formally by the psychologist, ranged as follows: six very superior, five superior, five above average, seven average, four dull normal, six borderline, and four with defective intelligence.

The explanation for the small number of mental defectives in this group of rejections may be that they were disqualified as being obviously below normal by the local draft board or else they may not have been detected at all and were sent on to the army induction boards. Many mental defectives unless carefully studied may pass as healthy young men.

It is interesting that 10 per cent of our cases had previously been in the Army and that some of them had a nervous breakdown due to that experience. Although the proportion of negro and white selectees coming before our seven local boards was about equal, only six negroes were referred to the psychiatrist. One would suppose that there would have been a greater number of doubtful psychiatric cases among the young colored boys.

In order to present to you some of our cases, we have prepared several brief formulations:

Case 1. This man had had several prolonged attacks of undulant fever with residual nervousness, fatiguability, and difficulty in thinking. His intelligence was above average, but he solved only two out of 20 Abstract Thinking Problems. He was a peculiar fellow and was rejected because of chronic undulant fever and schizoid trends.

Case 2. This boy sat rigidly in his chair and smiled hopefully; his reasoning was very faulty in spite of having a good vocabulary. When answering a test question about the difference between a child and a dwarf his blood pressure jumped up to 162. He felt that he had to "control his mind." He was disqualified as a simple schizophrenic.

Case 3. A 23 year old male who had a psychosis while in the Marine Corps, following which he finished business school. He was terribly preoccupied with sex and religion, and his thinking was superficial, illogical and concerned with fears of being persecuted in the Army. He was rejected as a schizophrenic.

Case 4. A husky laborer with superior intelligence and psychotic ideas that he was responsible for the war. He told in a disconnected way about spilling packing material at this work, which made others think that he was a spy who was going to set fire to the factory. To the previous examiner he had presented the picture of a psychoneurosis with cardiovascular symptoms and signs predominating.

Case 5. A 35 year old colored porter had recently had an injury with an aftermath of fits, fever, night sweats, plus a great deal of anxiety about his health. Post-traumatic states so easily become chronic that this typical case was considered a poor risk.

Case 6. A 31 year old college graduate was examined just one month after his mother's death and was more than normally upset. He had long been over-conscientious, sensitive to criticism, and suspicious, and at the age of 17 had had a breakdown, at which time he was hoodooed by a colored maid. During the interview, his thoughts frequently strayed from the subject. He had fears of dying and fears of being in a crowd. His brother had a nervous breakdown at Camp Shelby recently.

Case 7. A 28 year old boy was thin and frail, had queer mannerisms, little emotionality, and vagueness in his ideas. He talked in a queer manner about "negative and positive phases" in his life. He had very superior intelligence, but had difficulty with abstract thinking. He said exercise or excitement made him nervous and he feared breaking down under Army conditions. There was a strong possibility of a schizophrenic reaction and he was considered a poor risk.

Case 8. A 35 year old salesman, who had frequently changed jobs. He could not make a go of marriage and had a breakdown at that time with anxiety, ideas of suicide and numerous phobias. Since then he has been tired all the time. He would not last long under discipline.

Case 9. Thirty-two year old with a history of digestive disturbances since the age of 15, showed

extreme variations in pulse and blood pressure. He was so concerned with bodily ailments that he was unable to repeat more than four digits forward. Three members of the Medical Advisory Board were undecided about rejection. He said he would think himself a slacker if rejected.

Case 10. A fat boy of the Frohlich's type, just out of law school with a good scholastic record; had been nervous for about a year and a half, and was afraid of losing his mind like his uncle had done in the last war. Because of hypochondriacal complaints and a recent hysterical collapse he was rejected.

Case 11. A steel worker, who had carried a great deal of resentment for having been brought up in an orphanage. He wanted to live his own life, disliked being bossed, and knew he could not conform to Army discipline. He wanted to show his heroism in the most dangerous combat situations, yet he felt that the Army would persecute him by placing him in such situations. He was a typical psychopath who had no place in the modern Army.

Case 12. A boy with a very labile blood pressure and tachycardia was rejected because of a previous history of prolonged anxiety, although of superior intelligence. He would probably break down with cardiovascular complaints. He had two brothers in the Army.

Case 13. A 27 year old impressionable Italian with deep feelings of inferiority because of his race, wanted to be in the Army to prove his patriotism. He had experienced queer bodily sensations which he attributed to trauma or venereal disease. Tests showed difficulty in concentration and poor abstract thinking. Although he had been consistently employed, we felt that he was probably schizophrenic.

Case 14. A colored elevator operator was rejected because of repeated tendencies towards "fits" and hallucinations accompanying week-end drinking. Intelligence was average.

Case 15. A 21 year old homosexual had practiced perversions since puberty, had been dismissed from college, had been arrested several times, and had a strong alcoholic history. The decorum was that of the homosexual. He would be bad material for the Army.

DISCUSSION AND SUMMARY

Psychiatric disorders appearing in the full-blown form, psychoses or long standing psychoneuroses, were easy to diagnose and dispose of. But there was more difficulty in uncovering the disorders in persons who came to the examiners with little in the way of presenting symptoms. In the latter category we found the pre- and post-psy-

chotic schizophrenics and the psychopaths, who together made up 20 of the 48 men rejected.

The schizophrenics were characterized by a marked discrepancy between their talents and their ability to use such talents, and by a gradual decline in abilities through the years. We observed in these cases their propensity to float along in society, merely existing or working as marginal men, unnoticed until brought up for questioning by the demands of the war situation.

Various types of psychopaths were observed, the sexually perverted, the inadequate, and the suspicious, hostile, and anti-social individuals.

The 17 psychoneurotics were promptly recognized but were harder to classify as to suitability for military service. The duration of their symptoms and their attitude toward their symptoms were valuable criteria to go by. Some had evidence of thinking strongly in terms of compensation. Actual somatic involvement such as cardiovascular and respiratory dysfunction also weighed against acceptance.

Those subject to epileptic seizures were not problems once we were certain of their attacks. Outside information was obtained when necessary.

We found that employers, relatives and friends were very cooperative in giving us aid. On one occasion we made a personal visit to the home of a selectee to learn more of the man's personality from his parents. Our contacts with laymen in the local boards and elsewhere revealed considerable insight on their part into the importance of psychiatric studies.

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DISCUSSION

Dr. Edmund Connelly (New Orleans): This paper is a very timely presentation of the many difficulties which we are encountering in enlisting our new Army, to give you some idea of the extent of the problem and the desirability of an intense selectivity as to the psychiatric work. There is no question but that elimination of the type of people mentioned will not only make a better Army but it will save a lot of money. The question is going to be asked as to the practicability of going into the problem as thoroughly as the doctors have done in their examinations for the advisory board. There is no question probably but that a great many cases are going to be overlooked in the haste of enlistment. From my own experience with the advisory board, which is very brief, I have found it extremely difficult to get histories. Unfortunately the men I saw were practically all from the country and I was not able to contact the family and friends and the exchange board sent practically no details.

There are some types of people we certainly want to keep out. At times it is hard to decide on some of them. No doubt all psychotics—anybody who ever had a psychosis should be kept out.

There are a few types possibly that are allowed in. I believe an occasional psychopath might do, but as a general rule, I believe the elimination of them all would be the best plan.

I might say that I went through the last war and I saw the men before, after and during the service. Of course we had a great many cases of psychosis to develop. A great many neurosis developed in people anybody would have placed in an Army but after the war I believe that most of those men got well; the residue of men who would have been probably rejected with comprehensive psychiatric examinations.

The only difficulty with thorough examination is when taking several million men in the Army it is hard to do. I think, however, it is undoubtedly the goal to aim at and make every effort to make as thorough an examination as we can at all times. The ones we miss probably will have to be charged up to the usual waste that goes with war.

Dr. C. S. Holbrook (New Orleans): I was rather surprised at the marked pathology present in their cases. I feel like a number of these cases should have been recognized earlier, and I presume the essayists think so. I believe epileptics should have been eliminated with a diagnosis made from the history and this applies to convulsions of any type. There are a number of cases I have seen where the question has arisen as to advisability of military service where men actually have been in institutions for mental diseases and some of them have been accepted. I was recently talking with one of my confreres and he told me how well one of his patients was getting along and how splendidly he looked in his uniform. This man was recently in an institution. Such things as that should not happen. He will be in a government hospital before long; maybe for 50 years and the taxpayers will have to carry him along.

It is a difficult job, of course, for the examining board when they see a man for a brief period, to dispose him. In questionable cases I do not think you can determine much in an examination of less than an hour. A recent tendency has been to send all men to the induction center—everyone who has two arms and two legs and is not definitely crippled one way or another is sent to camp for examination. Several of these cases who should have been eliminated have been sent to camp and a psychotic disturbance has been precipitated by that experience alone. I think that is a bad plan. As thorough examination as can be made should be made before the man has to go to an induction center.

When Dr. Gillespie, from England, was here a few months ago he discussed this problem with many of us and he had a good scheme. He had in mind a questionnaire that would go back into the patient's family; alcoholism, epilepsy, psychotic

trends in the family, developmental history: stuttering, bed wetter, night terrors, phobias and fears or any other psychoneurotic manifestations. About thirty or forty things would be considered; one might get by if one, two or three of these were positive but anything over that would be considered as dangerous and the man eliminated or sent to a board of specialists for examination. Some such scheme could be worked out and used in the ordinary examining boards and the patients who scored above a certain level could be sent for further examination or definitely relieved of participation in the military program.

Dr. Roland Young (Covington): This is a most important subject and very timely and I would like to delve a little into history. Since the bonus is no longer of present moment, I would like to refer to some of the veterans back at the time when our present President took the reins of government. Half a dozen or more who were not getting bonuses, mostly residents of New Orleans too, came to my office and offered themselves as sick with a present illness history that was not at all convincing and even reluctantly admitted their doctor could find no trouble. I carefully checked them and frankly told them I could and would not make them out sick. They were usually, too, fine physical specimens of about 40 years of age.

This recalls to my mind a recent meeting that the parish society had with a few guest doctors present. A very good and competent man of one of our cities connected with a large industrial concern was with us and talking over some of the situations in the industrial medical field, the malingerer was mentioned in regards to accidents and that sort of thing. He said that he had never seen a malingerer. I suggested that there is such.

May I say a few words about petit mal and potential epileptics. When we suspect a case and cannot confirm this type of disorder the electroencephalogram may aid in the diagnosis.

Dr. Thompson, what do you know about those who want to get in and really aren't fit for the Army and yet try to edge in? I refer to the psychoneurotics and moral deficients. They put up a good front, cover-up and really "malingering" in a sense to gain their end.

Dr. Harry Koretzky (Port Barre): In selecting these boys for the Army we can do the same way as we do in civilian life. Today we have an antiquated system in Louisiana whereby we can take a boy about to go under a psychotic crisis and get the judge to put him in an institution which is enough to bring about a crisis. In handling these Army cases we should be careful and see that these boys are not precipitated into something worse. In the last war many suffered from shell shock and in reality they were already neurotic and psychotic and there was something

wrong. I think I agree with Dr. Holbrook that we should look for those things and examine the boys mentally before inducting them in the Army.

In the last war in the French Army in the amount of surgical cases 10 per cent were sent to neurologic centers for war assaults. That seems a small amount now. Of those patients those who had not been discharged as psychotics or from what they called emotional type of psychosis—all recuperated except 84. Many of these I saw abroad.

We are told now, and the man in the street is skeptical about what he is told, that in our own draft the rejections are very large. In Washington examinations, about 50 per cent of the men are rejected on physical grounds; 60 per cent consisting of men who were sent to psychiatric review boards. Of the 60 per cent, 1,000 men, 25 per cent were rejected. That is astonishing in view of the French Army; every citizen serves unless he is rejected on physical grounds. The man on the street should be warned that the criteria for conscription of the army in 1914 in France were different from the trends in the army of 1941 and 1942 in America. The U. S. Army is looked upon as an army of potential officers. Hence the man on the street should be told that it is necessary that this 25 per cent be eliminated by proper examination for two reasons: One reason is that he will not be competent if he is evicted by psychiatric disorders as spoken of here. Secondly, there will be a tremendous economic loss from the valuable material on the part of men not able to take it in the Army. We have very expensive air machines, expensive machine guns and armored cars and any time a man causes destruction of that expensive apparatus, we as taxpayers have to pay for it. Another reason is that the men who are unfit have to be maintained by the medical service of the army, navy and aviation corps. That is expensive and takes away doctors who are required for far more active and important work in attending to military casualties which are a great many in any case. I think we, as doctors, should inform persons in the community that the large number of rejections found by competent psychiatrists is no reflection on the present citizenry or reflection on the psychiatrist.

Dr. Daniel Rose (New Orleans): I would like to ask Dr. Watters and Dr. Thompson if they had encountered any malingering and if so, if they had any pet way of treating this.

Dr. T. A. Watters (In closing): In regard to malingering—I know a great deal of consideration has been given to this matter by selective service workers; however, in our group we have not encountered one single malingerer.

In reference to the matter of epileptics to which Dr. Holbrook referred, a large number were sent to us, which very well could have been rejected

by the local boards. Out of six, five gave definite history of convulsive seizures.

In regard to the comment of Dr. Young, and his question in regard to handling men who want to go in, in spite of disability, candidly I talk with them and point out the likelihood of what will happen if they do and what good they can do if they stay out. None of them have disagreed with me and all remained out of the Army. These particular men were definite risks.

One thing in regard to slackers. I do not believe we encountered one single slacker in the cases reported. I have been psychiatric advisor to the

whole state system, so there have been a number of cases which came to my attention, other than the series reported. I know of one slacker who was discussed with the officials at Jackson Barracks. He was studied by another advisory board and was taken in just the same.

There are many methods that have been devised to test potential soldiers but I do not believe anything is as satisfactory as the clinician seeing the person and talking with him.

We are grateful for the discussion. We have learned a great deal from this work and hope we have shared our experience with you.

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THE DEMAND FOR PHYSICIANS

The supply of physicians is of tremendous importance not only to the armed forces but also to the civilian authorities under whose jurisdiction comes the health and welfare of the population as a whole. The armed forces have now approximately some 40,000 physicians devoting their entire time to military medicine. There are approximately 130,000 of the 170,000 physicians in the country able to carry on in the practice of medicine. This leaves roughly for the population as a whole some 90,000 physicians who are available to take care

of the civilian sick. The armed forces at the present time apparently have enough doctors to supply their needs until the first of next year, at which time there will be additional calls for the service of the doctor to meet the ever-increasing size of the Army.

The problem is how many more medical men can be spared from the civilian population. Roughly those in authority in the office of Defense Health and Welfare Services, and of the Procurement and Assignment Service, of which Dr. Lahey is chairman, feel that the upper limit of medical men that can be supplied to the armed forces is 58,000. According to a newspaper story, Colonel Rankin, of the Surgeon General's office, has stated that it will be necessary to have approximately one doctor to take care of about 1500 civilians. This will spread the doctors pretty thin in civilian life and likewise it will be impossible to give the armed forces all the doctors they feel they will need.

The ratio of one to 1500 does not take into consideration the fact that there will be still needed specialists and those particularly skilled in certain branches of medicine who will not practice in the ordinary sense of seeing persons with any type of illness. There will be undoubtedly competition for physicians in civil life, in industry and in the war activities. It will require superb planning to spread the supply of doctors so that no one will suffer. The doctor is often in a quandary. Are his services needed more at home than in the Army and Navy? It is a difficult question to decide. Probably it will have to be decided eventually not by the individual but by those who best are able to judge of the needs.

The Louisiana doctors, it might be said, have volunteered for the Army in a remarkably large number. As a matter of fact of all states in the Union, Louisiana has given a greater percentage of doctors than any other state. Of all the cities in the country New Orleans has contributed a greater percentage of physicians to the armed forces than any other city of considerable population.

QUININE

This country of ours has always considered itself more or less self-sufficient. We have always had an abundance of everything and while many of the things with which we come in daily contact are brought from the South Seas or from the far ends of the world, we have always been able to get a sufficient amount and have never felt their need. Now with the advent of war and the closing of so many channels of commerce, we are beginning to feel in many fields a real lack of materials we have always thought essential. Lack of rubber is almost too hackneyed an example to quote.

The medical profession now finds itself faced with a very limited supply of quinine. Quinine is of extreme importance not only for the civilian population but also for the troops moving to tropical countries. Drug-gists have been urged to send to a central collection bureau all of their excess quinine. The physician is being asked not to use quinine except in proved cases of malaria and to substitute atabrine, but even this latter drug is scarce. Quinine, and its alkaloid quinidine, is not only a specific in malaria but is a near specific in certain types of cardiac disorders. A small amount of quinine and a good reserve of quinidine are being kept for the treatment of these heart disorders. There seems to be an adequate supply of quinidine if it is used only as indicated. The same thing applies to the quinine salts in the treatment of malaria. Do not give quinine unless the plasmodia are definitely shown to be present in the blood. Avoid the use of quinine in compounds and mixtures which are given for purposes other than their anti-malarial effect. Do not use quinine under any circumstances unless it is absolutely necessary. If the physician has in his office a supply of quinine it might seem only a small contribution to our efforts to win the war, to send it to the central collecting agency, but that quinine might save a soldier's life.

Of all the tropical diseases that are of importance, malaria is by all odds the number one on the list of diseases that have to be taken care of, according to Sawyer of

the Rockefeller Foundation, who is serving at the request of the Secretary of War as a consultant on tropical diseases. Already malaria is causing a terrific morbidity in the tropics in the armies of the world. Conserve quinine and donate any surplus quinine.

VARICOSE VEINS

The local secondary effects of varicose veins in the legs are well known. When varicosities are extensive there is an associated edema, often eczema of the overlying skin, and ulceration may take place, or as is well known, there is the occasional pulmonary complication from thrombus formation, followed by embolus to the lungs. However, it is not generally recognized that there are symptoms which depend in considerable part on the failure of circulatory function which arises as result of the pooling of blood in varicose veins. Such symptoms include fatigue, dyspnea, dizziness, fainting, precordial distress, all arising as result of hemodynamic disturbances. A normal person in the upright position is assumed, on excellent evidence, to have an accumulation of at least 500 c. c. of blood in the legs. When the veins are markedly distended it can be readily appreciated that the accumulation is even very much more marked than with the normal. An accumulation of a large amount of blood in this peripheral pool necessarily occasions an insufficient amount of blood to the tissues of the lungs, of the brain and to the coronary circulation, anoxemia presumably producing most of these symptoms listed above.

In a recent study by Chapman and Asmussen,* a survey was made of the state of the circulation in a large group of patients, some 250 from the out-patient department of the Massachusetts General Hospital, who had large varicose veins. Approximately one-fifth of these patients had dyspnea and other symptoms already mentioned. None of the patients who had symp-

*Chapman, Earle M., and Asmussen, Erling: On the occurrence of dyspnea, dizziness and precordial distress occasioned by the pooling of blood in varicose veins, *J. Clin. Invest.*, 21:393, 1942.

toms had any of the characteristic or even equivocal evidence of heart disease. These patients were studied in the recumbent and in the tilted position. While some of the authors' methods and some of their results are open to serious criticism, nevertheless the fact remains that there were circulatory changes demonstrated which were highly suggestive. It is well known that the venous pressure is increased in the presence of varicose veins even when a patient is in the recumbent position. There is usually an increased greater blood volume to compensate for the blood pooled in the extremities. It is quite possible that varicose veins are dependent upon some fundamental, possibly some embryologic defect in the vein which in turn is made worse by the

increased venous pressure in the upright or supine position. A vicious circle is established. However, without discussing the correctness of the methods employed by these authors, the fact remains that in their follow-up of the patients who had pronounced varicosities the subjective symptoms in the different individuals disappeared or diminished to a remarkable degree when corrective measures were taken to overcome the pathologic state of these blood vessels. The practical application of these physiologic studies is obvious. Varicose veins should be obliterated. The patient who complains of some of the symptoms cited above should be examined for the presence of varicosities and relief may be promised if the varicosities that may be found are corrected.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

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| <p>November 2. Orleans Parish Medical Society Board of Directors, 8 p. m.</p> <p>November 3. Eye, Ear, Nose and Throat Staff, 8 p. m.</p> <p>November 4. Clinico - pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Hutchinson Memorial Clinic Staff, 8 p. m.
Mercy Hospital Staff, 8 p. m.</p> <p>November 5. Clinico - pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
Baptist Hospital, Executive Meeting, 8 p. m.</p> <p>November 9. Scientific Meeting, Orleans Parish Medical Society, 8 p. m.</p> <p>November 11. Clinico - pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Touro Infirmary Staff, 8 p. m.
Women's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.</p> <p>November 16. Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.</p> <p>November 17. Charity Hospital Medical Staff, 8 p. m.</p> <p>November 18. Clinico - pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.</p> | <p>Charity Hospital Surgical Staff, 8 p. m.</p> <p>Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.</p> <p>November 19. Clinico - pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.</p> <p>November 20. I. C. R. R. Hospital Staff, 12:30 p. m.</p> <p>November 24. Baptist Hospital Staff, 8 p. m.</p> <p>November 25. Clinico - pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
French Hospital Staff, 8 p. m.</p> <p>November 26. Clinico - pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.</p> <p>November 27. L. S. U. Faculty Club, 8 p. m.
New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.</p> |
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- During the month of October the Society held one regular scientific meeting. The program was as follows:
1. Report on the Maternal and Fetal Mortality during 1941
By Dr. Edward L. King, Chairman of the Committee which conducted this survey.
 2. Duodenal Diverticulitis
By Drs. Donovan C. Browne and Gordon McHardy.

NEWS ITEMS

Dr. George Mayer presented a paper on Pregnancy Complicating Fibroids at the Monroe Charity Hospital, Monroe, on September 14.

Dr. Julius L. Wilson presented a paper on Tuberculosis in War Time at the Southern Tuberculosis Conference, Memphis, October 5-7.

EDWIN L. ZANDER,
Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

AMERICAN MEDICAL ASSOCIATION

After prolonged and intensive consideration, the Board of Trustees of the American Medical Association has come to the conclusion that the annual session of the Association scheduled to be held in San Francisco should be cancelled. An official announcement to that effect will appear in The Journal of the American Medical Association. This decision of the Board of Trustees was made after securing the best available official information and after thorough consideration of the many factors involved.

NEWS ITEMS

Dr. Charles A. Baumhauer, a Tulane graduate of 1938, was awarded by Major General George C. Kenney at General MacArthur's Headquarters, Australia, a silver star for gallantry in action. The citation read: "He did a great deal to relieve the pain and suffering of wounded men and helped establish a feeling of safety and security among the personnel, who had been through a harrowing experience."

Dr. G. W. McCoy, Director of the Department of Public Health of the School of Medicine, attended the Meeting of the Council on Pharmacy and Chemistry of the American Medical Association at Chicago, Illinois, on October 2 and 3, 1942.

First Lieutenant J. C. Swartzwelder, M. C., formerly Assistant Professor in the Department of Public Health of the School of Medicine, is now on active duty in the United States Army, and is

stationed at LaGarde General Hospital in New Orleans.

Dr. Marion Winifred Hood, formerly with the University of Illinois College of Medicine, has recently been appointed Assistant Professor of Parasitology in the Department of Public Health. Dr. Hood received her M. A. degree from the University of Wisconsin, and her Ph. D. from the University of Illinois College of Medicine. Her undergraduate college work was done at Carroll College, Waukesha, Wisconsin, from which college she received an A. B. degree. Dr. Hood has held positions at Northwestern University Medical School and at the University of Illinois College of Medicine; she has also done special work at Tulane University, in the Department of Tropical Medicine of the Tulane School of Medicine, and also at Gorgas Memorial Laboratory, Panama.

On September 10, 1942, Dr. Edgar Hull, Director of the Department of Medicine of the School of Medicine, and Dr. Robert Lowe, Instructor in Medicine, spoke before the Seventh District Medical Society at Opelousas, Louisiana. Dr. Hull's subject was Some Medical Aspects of Chemical Warfare Agents. Dr. Lowe's subject was Some Little-Recognized Points in the Diagnosis of Nutritional Deficiencies.

Major Chester S. Fresh, a member of the Department of Medicine staff of the Louisiana State University School of Medicine who is on leave of absence for the duration, has been made Commanding Officer of the Station Hospital at Grenier

Field, Manchester, New Hampshire. Major Fresh, who is an Army Air Corps Surgeon, has been on active duty since 1940.

Dr. Val H. Fuchs, Dr. George Taquino, and Dr. Monte Meyer were in Chicago, Illinois, attending the annual meeting of the American Academy of Ophthalmology and Otorhinolaryngology, which was held on October 11-14. All three of these doctors are members of the staff of the Department of Otorhinolaryngology of the School of Medicine of Louisiana State University.

The Third Annual Medical Meeting of the National Foundation for Infantile Paralysis will be held in New York City on December 3-4 inclusive.

The Salmon Committee on Psychiatry and Mental Hygiene of the New York Academy of Medicine has named Dr. Emilio Mira, professor of psychiatry at the University of Buenos Aires, Argentina, and formerly full professor of psychiatry at the University of Barcelona, Spain, as the Salmon Lecturer for 1942.

The lectures will be held on three successive Friday evenings: November 6, November 13 and November 20, in the New York Academy of Medicine Building, 2 East 103rd Street, New York City. Members of the medical profession and their friends are invited to attend.

SUPPLEMENTAL STAFFS FOR EMERGENCY BASE HOSPITALS

Selected hospitals and medical schools in the coastal states have been invited by the Surgeon General of the U. S. Public Health Service to organize affiliated staff units which will be ready to serve when needed to supplement the medical staffs of Emergency Base Hospitals, now being designated by the Medical Division of the Office of Civilian Defense. These units resemble the affiliated hospital units of the Army except that they are smaller in size. They are being organized in order to assure suitable status and remuneration for physicians who may be called upon in the event of an enemy attack in their locality to care for casualties and other patients who have been evacuated to the interior of their region.

The designation of Emergency Base Hospitals and the formation of affiliated units are part of a joint hospital program of the Medical Division of the Office of Civilian Defense and the U. S. Public Health Service. The program is authorized under an agreement concluded March 2, 1942, between the Federal Security Administrator and the Director of the Office of Civilian Defense.

Physicians in the affiliated units will be commissioned in the inactive Reserve Corps of the Public Health Service. Unless an urgent need for their services should arise, they will remain

on an inactive status for the duration of the war. They will be called to active service only if hospitals in their regions must be evacuated and the civilian population must be moved because of military necessity. Activation of the units will take place by order of the Surgeon General at the request of the Chief Medical Officer of the Office of Civilian Defense on advice of the Regional Medical Officer and the State Chief of Emergency Medical Service in charge of the affected areas.

The commissions will be in grades ranging from Passed Assistant Surgeon to Senior Surgeon, and when units are activated, these officers will have the rank, pay and allowances equivalent to those of officers in the armed forces.

Institutions invited to form units are asked to nominate an outstanding physician or surgeon as Unit Director, who, if he meets the physical and other requirements, will be commissioned Senior Surgeon in the Public Health Service Reserve. The Unit Director will then nominate the remainder of the staff and appointments will be made after clearance through the State Chief of Emergency Medical Service. Nominations are to be limited to male physicians over 45 years of age, to those under that age who have physical disabilities which disqualify them for military service but which do not interfere with their professional activities, and to women physicians.

In order to avoid serious depletion of the professional staffs in the medical schools and hospitals of the target areas, the Surgeon General has recommended that medical schools draw their affiliated units in part from associated hospitals and that nonteaching hospitals invite physicians from other qualified hospital staffs to collaborate.

AMERICAN GASTROENTEROLOGICAL ASSOCIATION

The American Gastroenterological Association on January 1, 1943, will publish the first issue of a new Journal to be called, Gastroenterology. The new Journal will be owned by the Association, and will be the official publication of the Association, and will be published by Williams and Wilkins Company. It will appear monthly, and the subscription price will be \$6.00 per year.

Dr. W. C. Alvarez will be the Editor (after June, 1943) and Dr. A. C. Ivy will be the Assistant Editor. The Editorial Board will consist of Doctors A. H. Aaron (Buffalo), J. A. Barga (Rochester), H. L. Bockus (Philadelphia), W. C. Boeck (Los Angeles), B. B. Crohn (New York), R. Elman (St. Louis), F. Hollander (New York), Sara Jordan (Boston), J. L. Kantor (New York), B. R. Kirklin (Rochester), P. Klemperer (New York), F. H. Lahey (Boston), F. C. Mann (Rochester), H. J. Moersch (Rochester), V. C. Myers (Cleveland), W. L. Palmer (Chicago), J. M. Ruffin

(Durham), R. Schindler (Chicago), and D. L. Wilbur (San Francisco).

Gastroenterology invites for publication clinical and investigative contributions which are of interest to the general practitioner as well as the specialist and which deal with the diseases of digestion and nutrition, including their psychological, biochemical, pathological, parasitological, radiological and surgical aspects.

Manuscripts should be sent to Dr. A. C. Ivy, Gastroenterology, 303 East Chicago Avenue, Chicago, Illinois. Letters regarding subscriptions and business matters should be addressed to Mr. R. S. Gill, Williams and Wilkins Company, Baltimore, Maryland.

UNITED STATES PUBLIC HEALTH SERVICE

Passed Assistant Surgeon Jack G. Mearns and Surgeon Samuel J. Hall have been ordered to the United States Marine Hospital in New Orleans for duty. Assistant Surgeons James A. Skultety and Wardell M. Mills have been called to active duty in the Reserve Corps and ordered to the Marine Hospital in New Orleans.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week ending September 5 there were 108 deaths in the City of New Orleans, divided 69 white and 39 negro, with 24 deaths in children under one year of age. For the week ending September 12 there were only 106 deaths in the city, divided 71 white and 35 negro. There were only eight deaths in young infants this week, a truly remarkable record. For the following week which closed on the 19th of September, the 118 deaths were divided 74 white, 44 negro. Eleven of these deaths were in babies under one year of age. The following week there were only 95 deaths, but the week following which closed October 3 there were 145, so the two weeks' average would be small although not in figures comparable to the week of September 26. In this particular period of time there were 60 deaths in the white, 35 in the negro, and seven infants. The 145 deaths in the week of October 3 were white 95, negro 50, infants 18. The death rate this year is measurably smaller than last year. This seems to be general throughout the country although not quite as marked as in New Orleans.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Section of Epidemiology of the Louisiana State Board of Health shows that for the week ending September 12, there were only four diseases listed in numbers greater than 10, namely, 350 cases of syphilis, 106 of gonorrhea, 44 of pulmonary tuberculosis, 11 of typhoid fever. During this week there were

listed 263 cases of syphilis, 82 of gonorrhea, 38 of pulmonary tuberculosis, and most unusual 15 instances of typhus fever, seven of which were from Lafourche Parish and the rest scattered all over the state. Malaria for the first time made its appearance this week with five cases. For the week which came to a close on the 26th of September, there were recorded 788 cases of syphilis, 77 of gonorrhea, 26 of pulmonary tuberculosis, 15 of malaria, and 10 of diphtheria. One case of poliomyelitis was reported this week and five of typhus fever. The malaria cases occurred seven in Lincoln Parish and seven in Ouachita Parish. For the week which closed October 3, there were sent in to the Division of Epidemiology reports of 591 cases of syphilis, 270 of gonorrhea, 42 of chancre, and 34 of pulmonary tuberculosis. Two cases of poliomyelitis were found in this particular week, as well as three of typhus fever and five of malaria.

The New Orleans Medical and Surgical Journal,
1430 Tulane Avenue,
New Orleans, Louisiana
Dear Sirs:

Please find enclosed a copy of a plan for training the much needed nurses for our armed forces. This plan has been read very carefully by a number of outstanding doctors, all of whom have stated that in their opinion, it is an excellent idea.

It is on the suggestion of some of these that the proposal is submitted for publication in the "Journal."

Thanking you, I am

Yours truly,

(Miss) Terry Pullig.

TO "STREAMLINE" TRAINING OF NURSES FOR THE ARMED FORCES

Below is a brief outline of a plan for training the much needed nurses for our armed forces.

After having read so much about the need for nurses, I decided to talk to Army and Navy officials, doctors, nurses, and civilians who were in World War I about it and the possibility of getting registered nurses. Everyone was of the opinion that we need more and more nurses immediately but WHERE CAN WE GET THEM? I know for a fact that one general hospital unit has been practically begging since 1940 for nurses to volunteer as commissioned officers and by June 1942 this unit still did not have enough nurses to become a functional unit.

To keep pace with the expanding Army and Navy, the Government hopes that 55,000 girls will enter nursing schools this fall. They will have to pay \$200 to \$500 tuition for three years of training. Since most of these girls can work in some kind of much needed defense work and make good salaries it is going to be very difficult to get girls

to go to nursing school for three years. Assuming that they do though, under the present procedure they will be of no use to the Army and Navy until 1945. But nurses are needed *now* as well as then. Why not do the same thing to nurse training that has been done to the ship-building industry or the training of Army officers in officer training camps, viz., "STREAMLINE" the course so that the need of nurses for this *emergency* would be solved. After the emergency these nurses would *not* return to civilian life as trained nurses unless they went back and completed the regular course for nurses. In fact, during the emergency they would be enlisted nurses with equal opportunity for advancement in rank that enlisted men have.

The plan to solve this immediate need for nurses is:

1. The Army and Navy will select a number of doctors and nurses open-minded to possibilities of new methods of doing things. This committee is to work out the needs, requirements, and methods of getting it done even if doctors and nurses must be hired to train these "special" classes as rapidly as possible, but thoroughly in selected hospitals. By making specialists of these enlisted nurses it will take a much shorter time than the three years. A graduate nurse and a doctor said that it could be done in three months if the individual were intelligent and would really apply herself.

2. Since marriage and the physical requirements are keeping many registered nurses from volunteering their services, then why not reverse the procedure by enlisting only girls who are not married and have already passed a physical examination.

3. As enlisted nurses, there could be three different groups: (a) high school graduates; (b) those who have finished two years of college; (c) college graduates. All of these should have at least average ability. These could volunteer as enlisted nurses with the rank of (a) privates; (b) privates first class; (c) corporals with the same pay that men of these ranks get in the Army.

4. After the girls are selected, the number could be divided into groups which would be sent to hospitals selected to give this special training. When they enter for training, each individual can complete the requirements as rapidly as possible. On completion of the basic courses* these enlisted nurses would register, giving necessary data in a central office from which hospital units would get the number needed to become a functional unit. At the time of registration if a nurse is not called to duty immediately she may then specialize in

some field in which some special aptitude has been shown during her basic training.

5. When a hospital unit was being organized the nurses needed could be composed of a percentage of registered nurses as commissioned officers and the remainder composed of the enlisted nurses trained under supervision of the Army.

TERRY PULLIG,
Louisiana State University.

WOMAN'S AUXILIARY Louisiana State Medical Society

The coming of October has brought the usual renewed activity of members of the Woman's Auxiliary after a summer lull. Some of our Doctors and their wives were fortunate enough to get away for vacation trips but most of us had to curtail them to week-end expeditions for fishing or to country places. And some are still looking ahead to the hunting season for the only respite they will have from the every day grind.

Many groups and individuals worked energetically at Red Cross or other war-imposed tasks all through the hot weather. But it is only now that the Auxiliaries are meeting regularly for their programs, business and social hours.

The State President, Mrs. Clarence B. Erickson, is urging the members throughout the state to put especial emphasis on the Fund for Indigent Widows of Physicians and build the sum up to the point where it may be put to work if it is needed.

Orleans Parish has for a number of years given vital help to a widow of a physician through their Commemoration Fund, and since May, 1942, a second widow has received regular aid. It is not only in New Orleans that such a Fund could serve its purpose, but throughout all of Louisiana.

It is realized that it would take many years for the groups with small memberships to build up a working reserve, but with the Auxiliaries from the entire state working and pooling their sums, it should not be long before we do have enough to use. The calls will no doubt be few—and we pray that they will be few, but when and if one does come, we shall have such a satisfaction in being able to meet the need that it will all be eminently worth while.

"How is the money to be raised?" you ask. Again I refer to Orleans Parish because of their experience. There, each member is assessed one dollar a year, payable with her dues. In addition, members make donations in memory of loved ones or friends who have passed on. Many do this instead of sending flowers, and others commemorate happy events by making gifts in appreciation of those occasions.

Last year a generous friend of Mrs. Hebert, who was then State President, gave twenty-five dollars to the State Fund when she heard of the fine work Orleans Parish was doing.

And so, our Fund will grow. Let us support this

*Basic courses would include sufficient training in the different phases of nursing needed by the Army and Navy so that these nurses could perform the duties under the direction of a doctor or a registered nurse if the necessity were to arise. Such phases of training as obstetrics, pediatrics, are unnecessary for Army and Navy nurses.

fine project wholeheartedly and in a few short years we shall have a great oak from the little acorn planted rather timidly in 1941.

MRS. JAMES W. WARREN, State Chairman,
Press and Publicity.

STANDING COMMITTEES

Mrs. Clarence B. Erickson, President of the State Auxiliary, has appointed the following chairmen of Standing Committees:

Archives—Mrs. Paul Lacroix, 3132 State St. Dr., New Orleans.

Doctor's Day—Mrs. J. B. Montgomery, Lafayette.

Exhibits—Mrs. B. L. Cook, Minden.

Finance—Mrs. R. Spedale, Plaquemine.

Historian—Mrs. M. C. Wigginton, Hammond.

Hygeia—Mrs. C. P. Rutledge, 4334 Richmond Ave., Shreveport.

Legislation—Mrs. F. G. Ellis, 4624 Fairfield Ave., Shreveport.

Organization—Mrs. J. D. Frazer, DeRidder.

Parliamentarian—Mrs. Brinsfield King, 127 Oakwood Dr., Baton Rouge.

Cancer Control—Mrs. Nathan Polmer, 2207 Carondelet, New Orleans.

Program—Mrs. D. L. Kerlin, 648 Unadilla, Shreveport.

Press and Publicity—Mrs. Jas. W. Warren, 470 Audubon Blvd., New Orleans.

Printing and Supplies—Mrs. F. Creighton Shute, Opelousas.

Public Relations—Mrs. D. T. Martin, Donaldsonville.

Revision of By-Laws—Mrs. A. A. Herold, 1116 Louisiana, Shreveport.

Entertaining Service Men—Mrs. O. B. Owens, Pineville.

Bulletin—Mrs. R. T. Lucas, 535 Pierremont Rd., Shreveport.

Red Cross—Mrs. A. D. Mangham, Elizabeth.

Widows' Fund—Mrs. Aynaud Hebert, 2013 Napoleon Ave., New Orleans.

COUNCILORS

First District—Mrs. Edmond Souchon, 2123 Octavia, New Orleans.

Second District—Mrs. W. R. Metz, 2437 Jefferson, New Orleans.

Third District—Mrs. Willard Ellender, Houma.

Fourth District—Mrs. J. E. Heard, 3455 Caldwell, Shreveport.

Fifth District—Mrs. C. P. Gray, Sr., Monroe.

Sixth District—Mrs. A. W. Martin, Bogalusa.

Seventh District—Mrs. Olin Moss, 2011 Shell Beach, Lake Charles.

Eighth District—Mrs. M. H. Foster, 1316 Albert, Alexandria.

BOOK REVIEWS

A Handbook of Allergy for Students and Practitioners: By Wyndham B. Blanton, M. A., M. D., Litt. D. Springfield, Ill., Charles Thomas, 1942. Pp. 190. Price \$3.00.

In this small book the author condenses much of the present day knowledge of allergy. It should be especially helpful to the busy practitioner and medical student who do not have enough time to read the larger and more complete works on the subject. A general knowledge of allergy is valuable for any medical man, as more and more conditions in all fields of medicine are proving to have an allergic background. The important thing is for physicians to recognize an allergic condition whenever it is encountered. The sections on dermatologic, gastrointestinal, genito-urinary, neurologic, eye, and cardiovascular allergy are particularly interesting.

HENRY D. OGDEN, M. D.

Nephritis: By Leopold Lichtwitz, M. D. New York, Grune & Stratton. Pp. 328. Price \$5.50.

To one who has listened to Dr. Lichtwitz and noted his comprehensive knowledge and his sincerity of purpose, his book on nephritis takes on

added interest. This is a concise book replete with information of value to the physician. It is a happy blending of the scientific and practical. The author constantly aims at placing methods of diagnosis and treatment so simply and plainly that with a minimum of time and equipment they can be advantageously employed.

The first nine chapters deal with the basic facts of the functional physiology and pathology of the kidney. Following these are the chapters dealing with the various clinical types of nephritis. The author has appended a list of references at the end of each chapter and the book contains several illustrations and graphs. A good index has been compiled. It is the opinion of the reviewer that this book should prove to be a ready and reliable reference.

I. L. ROBBINS, M. D.

The Ophthalmic Formulary: By G. Griffin Lewis, M. D., F. A. C. S. Springfield, Illinois, Charles C. Thomas, 1942. Pp. 167. Price \$3.50.

This pocket sized volume of 170 pages is divided into three sections. The first section is devoted to the "pet" prescriptions of ophthalmologists, famous and otherwise, during three generations.

It serves a useful and possibly a harmful purpose. The reader is familiarized with ophthalmic therapeutic trends, especially of the past. Some of the prescriptions mentioned are among those frequently used by most ophthalmologists. Others, however, are souvenirs of bygone days and of concepts which have given way to more efficient therapy. The indiscriminate use of these prescriptions can do harm. They are not "heaven sent" magic formulae, as the tyro may easily infer. They are not substitutes for understanding each patient's individual eye problem. Unintelligent experiments with some of these prescriptions may actually do harm by delaying more effective treatment.

The second section of this volume is devoted to an alphabetic arrangement of drugs used in ophthalmic practice. It brings to the reader the names and general purposes of the best known ophthalmic medicaments. In some instances, unfortunately, the most frequently used dosage or strength is not given.

The index section is reasonably complete.

CHARLES A. BAHN, M. D.

Manual of Standard Practice of Plastic and Maxillofacial Surgery: Sponsored by the National Research Council. Philadelphia, W. B. Saunders Co., 1942. Pp. 432; illus. Price \$5.00.

This important manual is the first attempt to standardize the practice of plastic repair and of maxillofacial surgery. It is edited by an able group of plastic, dental and maxillofacial surgeons from the civilian professions and by representatives of the U. S. Army Medical and Dental Corps.

Its intent and its purpose is to bring to the medical officers of the armed forces a text to follow in the handling of the disfiguring and functional injuries of war. It fulfills its purpose to an admirable degree. The individuals responsible for the preparation of this text have made a definite contribution to civil and military surgery alike in its plastic and maxillofacial branches.

This treatise, of some 400 pages, clearly and generously illustrated and written in a concise, clear-cut form covers the repair of the defects and deficiencies caused by trauma in a most efficient and detailed manner. While it is not intended as a book for specialists *per se*, its contents will serve specialists in these branches to their benefit.

The reader is introduced to the body of the text by a consideration of general principles, fundamentals and essentials of plastic repair, which begins from the moment the casualty is first seen. What to do is strongly emphasized and what not to do is likewise emphatically stressed.

The repair of tissue deficiency by skin coverage and the devious means of bringing this about by various types of skin grafts and flaps are clearly presented.

An effort has been made to divide the first section of the book into regional chapters and each anatomic area receives detailed attention. The methods of repair described are those which have stood the test of time and are those more apt to give uniformly satisfactory results. Operative technic is associated with corresponding figures and graphic illustrations, which are most helpful in clarifying surgical approach and step by step procedures.

The second section is devoted to maxillary surgery. These chapters concerning gunshot wounds involving the jaw and fractures of the jaw are outstanding, both as to their informative descriptions as well as the practical and concise methods employed in their care.

Section three deals with maxillofacial prosthesis, its fundamentals, the relationship between surgeon and dentist, its anatomic and cosmetic aspects and the indications for application.

Section four, on anesthetic technics, discusses the types and varieties of anesthesia used, the pre-operative medication and the choice of anesthetic agent. Ether anesthesia is still considered the safest in inexperienced hands. This small section maintains the high standard of the balance of the book.

The manual is certain to receive the approbation it deserves. It should be read by every medical man in the armed forces of the country as well as civilian physicians. They will find it of inestimable assistance in solving some of the problems of the preservation of feature and function.

WALDEMAR R. METZ, M. D.

The Surgery of Pancreatic Tumors: By Alexander Brunschwig, M. S., M. D., F. A. C. S. St. Louis. C. V. Mosby Co., 1942. Pp. 416, illus. Price \$7.50.

This treatise was written in order to "deal with relatively few facts in a new developing field and (may) serve to stimulate further work in this field." The monograph is a review of the known facts but also, of necessity, deals with many controversial subjects in pancreatic disease. The volume is a timely and interesting dissertation on a rapidly expanding and intriguing surgical field. It is well organized and written. The illustrations are good but the photographs taken during operative procedures do not conform to perfection.

LEROY KLEINSASSER, M. D.

Modern Attack on Tuberculosis: By Henry D. Chadwick, M. D., and Alton S. Pope, M. D. New York, The Commonwealth Fund, 1942. Pp. 95. Price \$1.00.

The reviewer finds this book by Chadwick and Pope more than suitable for the purpose for which it was written. Not only do the authors discuss the current problems in tuberculosis control and

the operation of an effective regional control program, but the order in which the various chapters are presented, seems to cover well all there is to know concerning history, epidemiologic aspects, modern diagnostic procedures and the results of treatment in sanatoria.

The part which is very interesting and quite appropriate in tuberculosis control, is the emphasis made on case reporting, which has been a factor that has unquestionably retarded the program of the control of this disease, due to the fact that both the public and the medical profession have failed to regard case reporting as a vital and essential item in the ultimate eradication of tuberculosis.

The chapter on case finding stresses also the value of mass examinations among school children which the reviewer believes to be one of the most important activities in tuberculosis control and the possible prevention of adult tuberculosis.

The chapter on community campaign of eradication, is one of the most thorough which has ever been written, and if followed out as the authors have intended, those concerned, health officers, public health nurses and others concerned with community health, will find "The Modern Attack on Tuberculosis" a very efficient means of tuberculosis control and a wonderful guide to the ultimate and entire eradication of the disease not in the very distant future.

EMILE A. BERTUCCI, M. D.

Hippocratic Medicine; Its Spirit and Method:
By William Arthur Heidel. New York University Press, 1941. Pp. 149. Price \$2.00.

A most learned book devoted to a school of medical thought and practice that harks back to the golden days of Greek science. The Hippocratic tradition as we know it contained in the so-called writings of Hippocrates is the quintessence of the finest achieved in the science, the art, and the ethics of Grecian medicine. In the story of the principal character there is a brilliant exposition of science, its ideals, its ideas, its methods and its professors. Against a background of splendid erudition and coupled with fine quotations the author has concocted for the historically-minded physician a fine treat.

I. L. ROBBINS, M. D.

Collected Papers of the Mayo Clinic and the Mayo Foundation: Edited by Richard M. Hewitt, B. A., M. A., A. B. Nevling, M. D., John Miner, B. A., Sc., D., James R. Eckman, A. B., and M. Katharine Smith, B. A. Philadelphia, W. B. Saunders Co., 1942. Pp. 1099, illus. Price \$11.50.

This 1099 page volume is a year book from Mayo Clinic. It presents a compilation classified under twelve sections separately devoting the articles referring to eleven specialties and a final miscellaneous grouping containing numerous interesting treatises.

Of course, the physician who follows medical literature has read many of the interesting articles, particularly he who reads the "Proceedings of the Staff Meeting of Mayo Clinic." Many of the statistics and illustrations are familiar to one who has examined texts emanating from the clinic. The 659 articles titled astound one, emphasizing the flood of the medical literature from this single source. Selecting subjects the reviewer was especially interested in, I draw attention to the section on aviation medicine, the coverage of esophageal diseases, the attention given gastric carcinoma (a prominent Mayo Clinic subject), chemotherapy as related to each specialty. Pediatrics, obstetrics and pathology seem omitted, but others will find interesting coverage of their specialty.

The volume is well indexed. The abstracts are well chosen and nicely presented. The profession, as a whole, will accept the volume well and more particularly those physicians who have been associated with the Mayo Clinic.

GORDON MCHARDY, M. D.

PUBLICATIONS RECEIVED

W. B. Saunders Company, Philadelphia: Military Surgical Manuals Volume II, Ophthalmology and Otolaryngology, prepared and edited by the Subcommittees on Ophthalmology and Otolaryngology of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Military Surgical Manuals Volume III, Abdominal and Genito-Urinary Injuries, prepared under the auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council.

Charles C. Thomas, Springfield, Ill.: Blood Substitutes and Blood Transfusion, edited by Stuart Mudd, M. A., M. D. and William Thalheimer, M. D.

Columbia University Press, New York: Medical Parasitology, by James T. Culbertson, M. D.

Walter W. Brown Publishing Co., Atlanta, Ga.: The Mind and Its Disorders, by James N. Brawner, M. D.

Grune & Stratton, Inc., New York.: Aftereffects of Brain Injuries in War, Kurt Goldstein, M. D.

Lea & Febiger, Philadelphia: Roentgen Treatment of Diseases of the Nervous System, by Cornelius G. Dyke, M. D., F. A. C. R. and Leo M. Davidoff, M. D., F. A. C. S. A Text-book of Fractures and Dislocations, by Kellogg Speed, S. B., M. D., F. A. C. S.

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CLINICAL APPLICATIONS OF RECENT KNOWLEDGE CONCERNING BLOOD SUBSTITUTES*

URBAN MAES, M. D.†

AND

HARRY A. DAVIS, M. D.†
NEW ORLEANS

It scarcely seems necessary to emphasize the present need for an adequate substitute for blood. This need has long been felt but it has taken the pressure of two world wars to accelerate research for such a substitute. What then constitutes the ideal blood substitute? This has been defined by Maes and Davis¹ as a fluid which possesses the following properties: (1) availability; (2) effectiveness; (3) freedom from toxicity even when administered in large quantities; (4) lack of deterioration with prolonged storage; (5) content of one or more of the elements of blood; (6) possession of one or more of the biologic properties of blood; for example, ability to transport oxygen or ability to maintain the osmotic pressure of the blood. To these six attributes must be added a seventh; namely, freedom from antigenicity. It will be our purpose here to review the facts which have emerged from the clinic and from the laboratory concerning substitutes for fresh human blood.

CONSERVED BLOOD

Blood for conservation may be obtained from human donors, from human placentas,

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

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and from human cadavers. Conserved blood undergoes cellular and chemical changes which diminish its effectiveness as a fresh blood substitute. Thus, it has been found that even under optimal conditions certain changes occur: (1) Diminution in the number and phagocytic activity of the leukocytes; (2) disintegration of the blood platelets; (3) hemolysis; (4) increase in lactic acid and carbon dioxide and a diminution in oxygen; (5) reduction in the prothrombin content; (6) increase in the free potassium, which varies directly with the degree of hemolysis. The incidence of post-transfusion reactions, as might be expected, is greater with conserved blood than it is with fresh blood. Thus, in 2,373 transfusions of conserved blood from human donors, the incidence of reactions was 13.8 per cent. Of 214 transfusions with conserved placental blood, reactions occurred in 14.6 per cent. In 1,639 transfusions with conserved cadaveric blood the incidence of reactions was 19.6 per cent. In the majority of instances the reactions were due to contamination of the blood or to hemolysis of the transfused red blood cells. Another cause of transfusion reactions is incompatibility of the blood of the donor with that of the recipient. It is not our purpose here to review the theory of blood groups. However, certain advances have been made and several new blood groups have come to be recognized. In addition to the four blood groups, O, A, B, and AB, there are now recognized subgroups A₁, A₂, A₁B, and A₂B, which depend upon qualitative differences in the A agglutinin and which can be detected by human isoagglutinins. Other agglutinogens, M, N, P, and Rh, have been recognized by

means of heterologous isoagglutinins and are apparently of significance in the etiology of a certain number of post-transfusion reactions. The use of universal donor blood (group 0) has been followed by severe and even fatal hemolytic reactions. This is due to the fact that the serum of group 0 blood contains a and b isoagglutinins which are usually of low concentration. However, the blood of 3 per cent of group 0 donors contains a high concentration of these isoagglutinins and it is such blood which is liable to produce hemolytic reactions. By serial dilutions of the serum, the concentration of isoagglutinins may be determined before transfusion in order to avoid the use of a blood containing large amounts of a and b isoagglutinins. A more serious problem is presented by the occurrence of homologous group incompatibility. Not infrequently severe hemolytic reactions may follow the use of blood of the same group as that of the recipient. An explanation of this paradoxical phenomenon has been furnished by Landsteiner and Wiener² who have described an Rh agglutinin and isoagglutinin in human blood. The presence of the Rh agglutinin in human red blood cells can be determined by means of immune serum obtained from rabbits which have been given injections of blood from rhesus monkeys. In this way it has been found that 85 per cent of human beings are Rh-positive, that is, the Rh agglutinin is present in the erythrocytes, and 15 per cent are Rh-negative, that is, the Rh agglutinin is absent from the erythrocytes. The transfusion of Rh-positive blood into Rh-negative recipients is not followed usually by any reaction. In a small group of Rh-negative individuals, the Rh-positive blood acts as an antigen so that subsequent injections of Rh-positive blood result in a violent hemolytic reaction. The presence of isoimmunization to Rh-positive blood is not readily detected, since the reaction *in vitro* between Rh agglutinin and isoagglutinin is weak. Special methods of detection must be used. The Rh hemolytic reaction occurs in two types of patients: (1) Rh-negative individuals who have received previous in-

jections of Rh-positive blood; (2) women who are pregnant or have been pregnant recently and have not previously received a blood transfusion. In the latter group it has been found that Rh-positive substances are released from the fetus and produce isoimmunization in an Rh-negative mother.

A less frequent form of isoimmunization has been described by Wiener³ in which a patient of sub-group A₂ was rendered immune to A₁ agglutinin following the transfusion of sub-group A₁ blood. The presence of types M, N, and P does not appear to be significant in relation to transfusion reactions although rare instances have been recorded in which anti-M antibodies have been detected in human beings. This newer knowledge of blood groups and types must be considered in relation to the transfusion not only of fresh human blood but also of conserved human blood, whatever its source may be.

The dangers arising from the transfusion of so-called universal donor blood (group 0) have been referred to. The recent work of Witebsky and his co-workers⁴ is of interest in this connection. These investigators have shown that it is possible to inactivate the a and b isoagglutinins which are present in group 0 blood plasma. By adding to 500 c. c. of blood 25 mg. of A specific substance, which is obtained from commercial pepsin, mucin and peptone, the a isoagglutinin is inactivated. The b isoagglutinins are inactivated by adding B specific substance which is obtained from the gastric juice of human beings who belong to group B. The exact procedure as outlined by Witebsky and his co-workers⁴ is as follows: 25 c. c. of A substance (1:1,000 dilution) and 10 c. c. of B substance (1:1,000 dilution) are added to 500 c. c. of citrated blood at least five minutes before transfusion. These workers have given 40 transfusions of group 0 blood, which has been treated in this manner, without reactions. This procedure is definitely promising, inasmuch as it may eliminate reactions due to high titers of a and b isoagglutinins in group 0 blood.

HEMOGLOBIN—RINGER'S SOLUTION

Extracellular hemoglobin takes up oxygen more rapidly than does intracellular hemoglobin (Hartridge and Roughton⁵). Moreover, solutions of hemoglobin can exert a colloidal osmotic pressure which is greater than that of the plasma proteins (Adair⁶). With these facts in mind, Amberson and his co-workers⁷ used 12 to 14 per cent hemoglobin in Ringer's solution as a substitute for blood. They found that this solution could carry oxygen and maintain the colloidal osmotic pressure of the blood for short periods of time in animals which had been exsanguinated. However, the hemoglobin was soon converted to methemoglobin and rapidly excreted through the kidneys.

More recently Buttle and his co-workers⁸ used a hemoglobin solution (3.7 grams of ox hemoglobin per 100 c. c. of Ringer's solution) in cats subjected to hemorrhage. These investigators found an immediate rise in blood pressure, which, however, showed a tendency to fall later. They concluded that hemoglobin-Ringer's solution was inferior to whole blood but superior to gum-saline solution. Aubertin and his co-workers⁹ injected hemoglobin solution by vein into dogs and obtained a high death rate, many of their animals revealing pulmonary and renal lesions. Fairley¹⁰ studied the fate of extracorporeal circulating hemoglobin in man. He injected isotonic solutions of human hemoglobin in sodium chloride solution. He found that such hemoglobin is treated as a foreign substance by the body and is removed by excretion through the kidneys, by absorption by the reticulo-endothelial cells, and by catabolism in the circulation with the production of methemalbumin. Despite these facts, O'Shaughnessy and his co-workers¹¹ transfused 5 per cent hemoglobin in Ringer's solution into human beings but obtained severe reactions. It is evident that hemoglobin in solution is not yet ready to be used clinically as a blood substitute. The substitutes for fresh human blood which have been discussed thus far all possess the ability to carry oxygen. In chronic and

hemolytic anemia this property is an advantage. In most surgical conditions which require fluid replacement, for example, burns, traumatic shock, and hemorrhage, sufficient hemoglobin remains in circulation to provide the tissues with oxygen. This constitutes the basis for the use of blood substitutes which are devoid of the ability to carry oxygen.

HOMOLOGOUS PLASMA AND SERUM

The experimental basis for the use of homologous plasma and serum in clinical practice was established by the work of Guthrie and Pike.¹² These investigators found that plasma and serum could effectively replace whole blood in experimental hemorrhage. Their work was applied to human beings by Payne and Steen,¹³ by Mairano and Teneff,¹⁴ by Kunz¹⁵ and by many others. It is not our purpose here to go into details regarding the use of plasma and serum. The efficacy both of plasma and of serum has been well established in conditions associated with a reduction of the volume of whole blood, of plasma, and of plasma protein. Numerous reports which have appeared since the onset of World War II confirm this statement. Much discussion has arisen as to the relative value of plasma and serum. There does not appear to be any clear-cut evidence that one is more efficacious than the other. Serum possesses the advantage of not forming fibrin clots when it is refrigerated. Plasma does form such clots but this may be prevented by diluting the plasma with an equal volume of normal saline solution. On the other hand, a greater yield can be obtained of plasma than of serum per unit quantity of whole blood.

DRIED SERUM AND PLASMA

The necessity for, and expense of, temperature control in storing liquid serum and plasma has led to the introduction of dried serum and plasma. This is usually carried out by freezing the serum and plasma, followed by extraction of water from the frozen product *in vacuo*. The dry serum or plasma appears as a yellowish-brown powder which is very soluble in water. The

plasma or serum can be reconstituted by the addition of sterile distilled water to the powder. The concentration can be varied from normal to several times normal by altering the amount of water. The dried serum or plasma does not require refrigeration and can be kept at room temperature for indefinite periods of time without undergoing deterioration. Bond and Wright¹⁶ and also Mahoney¹⁷ have obtained satisfactory results with reconstituted serum and plasma in hemorrhage and traumatic shock in lower animals. However, Buttle and his co-workers⁸ obtained unsatisfactory results with the reconstituted serum and plasma which they transfused into cats subjected to severe hemorrhage. Their results from undried serum and plasma in the same experiments were definitely superior. Relatively few reports are available on the results of the use of dried serum and plasma in human beings. If the reconstituted plasma (Strumia et al.¹⁸) or serum (Best¹⁹) was of normal concentration, no reactions were noted in human beings by these workers. However, Brown and Mollison²⁰ reported 34 mild reactions in 202 transfusions of dried serum and eight reactions in 30 dried plasma transfusions. The transfusion of concentrated (two to four times normal) reconstituted serum or plasma is also followed by reactions. Brown and Mollison²⁰ noted 19 reactions in 91 transfusions. These reactions consisted of fever, vomiting, urticaria and lumbar pain. They found a high incidence of thrombosis of the injected vein when four times normal serum was used. Recently Mahoney and his co-workers²¹ administered reconstituted dried plasma and found an incidence of 3.5 per cent in 340 transfusions. Some discussion has arisen as to the amount of plasma or serum which should be administered, and attempts have been made to determine this by means of various formulas. Such formulas are based upon a calculation of the blood volume of the patient. Bushby and his co-workers²² have determined the hematocrit reading following transfusion of a known volume of plasma; for example, if a transfusion of 1,000 c. c. of plasma caused a

change of the hematocrit reading from 50 mm. to 40 mm., the blood volume would equal 4000 c. c., which is obtained by the following calculation: $V = \frac{1000 \times 40}{50 - 40}$. It is

obvious that all such formulas for the estimation of the blood volume in shocked subjects are vitiated by the fact that the reduction of blood volume continues while the test substance is being injected. The treatment of air-raid casualties in Britain has demonstrated the fact that it is useless to rely upon small amounts of plasma or serum. This fact has been stressed by various workers. An initial injection of 500 c. c. of plasma or serum should be given to a patient suffering from hemorrhage or shock. Thereafter, amounts up to 2,000 c. c. may be required, depending upon the behavior of the blood pressure and hematocrit readings. In patients suffering from burns, very large amounts of serum or plasma are often required.

ASCITIC FLUID

An inexpensive source of human protein is ascitic fluid which is removed from patients suffering from cirrhosis of the liver or cardiac failure. The transfusion of human ascitic fluid will elevate and maintain the blood pressure of dogs subjected to hemorrhage (Davis and White²³). Such fluid has been transfused successfully in human beings (Davis and Blalock²⁴). It has been administered with satisfactory results to patients suffering from burns (Maes and Davis¹) and from hypoproteinaemia (Davis and Getzoff²⁵). The total protein content of ascitic fluid varies from 1.5 grams per cent to 2.5 grams per cent. Reconstituted dried ascitic fluid has been administered successfully to dogs suffering from severe hemorrhage (Mulder et al.²⁶).

INCOMPATIBLE ISOAGGLUTININS IN PLASMA, SERUM, AND ASCITIC FLUID

Group-specific isoagglutinins are present in plasma, serum, and ascitic fluid. At times the titers of such isoagglutinins may be dangerously high and may lead to transfusion reactions. To obviate the danger of reactions from antagonistic isoagglutinins

the following procedures have been used: (1) Pooling of plasma and serum, usually eight to 16 in number (Edwards et al.²⁷; Levinson and Cronheim²⁸); (2) dilution of plasma (Strumia¹⁸); (3) mixture of equal quantities of fluids containing a and b isoagglutinins (Davis²⁹); (4) addition of boiled saliva from group B individuals to serum from group A blood (Jakobowicz and Bryce³⁰). In most instances the transfusion of incompatible serum or plasma will not result in agglutination of the red blood cells of the recipient, since the transfused isoagglutinins will be diluted by the body fluids of the recipient. However, if the titer of incompatible isoagglutinins is very high the inactivation by the recipient may be inadequate. Davis²⁹ has transfused incompatible ascitic fluid into human beings without reactions which could be attributed to agglutination of the red blood cells of the recipient.

The indiscriminate pooling of serum or plasma without knowledge of the groups of the constituents of the pool does not protect against the occasional occurrence of a pooled fluid possessing a high titer of a or b isoagglutinins. This is exemplified by the near fatal reaction reported by Polayes and Squillace³¹ following the transfusion of dried pooled human plasma. Mayner³² has reported a death following the use of plasma containing fibrin clots. In this case the plasma was not adequately filtered and the fatal outcome resulted from the formation of fibrin emboli in the lungs. The Rh factor remains to be considered as a possible cause of reactions following the use of plasma or serum. It is possible to have a reaction when plasma or serum containing anti-Rh agglutinins is administered to a patient whose blood is Rh-positive. Up to the present time, to our knowledge, no report describing such a reaction has appeared.

BOVINE SERUM AND DERIVATIVES

The high cost of production of human serum and plasma has led to an inquiry into the possibilities of using heterologous serum and plasma. Wangenstein³³ and his

co-workers transfused bovine plasma into human beings and reported a high incidence of post-transfusion reactions. Since these reactions resembled those following the injection of a foreign protein, it occurred independently to several groups of workers to remove the globulin fraction from the serum and plasma (Janeway and Beeson³⁴; Keys et al.³⁵; Davis et al.^{36, 37}). Davis and his co-workers^{36, 37} found that bovine serum albumin is an effective blood substitute and can elevate and maintain the blood pressure of dogs subjected to severe hemorrhage. Bovine serum globulin was found to be definitely toxic to dogs. These workers transfused bovine serum albumin into human beings without the production of reactions.

HORSE SERUM AND DERIVATIVES

Little work has been done on the possible use of horse serum and its derivatives as substitutes for blood in heterologous species. Davis and Eaton³⁸ have made a comparative study of the effects of the transfusion of horse serum, horse serum albumin, and horse serum globulin in dogs subjected to severe hemorrhage. They found horse serum albumin to be the most effective blood replacement fluid of these three. Much work remains to be done in this field. The use of heterologous serum and plasma protein is still in the experimental stage.

ARTIFICIAL BLOOD SUBSTITUTES

Various artificial substitutes for blood have been proposed. Gum acacia, which was introduced by Bayliss,³⁹ is a colloidal carbohydrate. Gum acacia has been used extensively as a blood substitute in man and in lower animals. It appears to be effective in maintaining the blood pressure after hemorrhage. However, it is excreted very slowly from the body and may accumulate in the liver, causing an interference with its ability to regenerate plasma protein. Moreover, it is slightly antigenic. Another colloidal carbohydrate — pectin — has been introduced as a blood substitute by Hartman and his co-workers.⁴⁰ Pectin is prepared in a 0.5 solution in 0.9 per cent sodium chloride solution. The solution is buffered to pH 7.2. These workers have

obtained satisfactory results with this material in lower animals subjected to various types of shock. They have also injected this solution into human beings. The preliminary work of these investigators suggests that pectin is not antigenic and that it does not accumulate in the body. However, further experimental work would seem to be indicated before conclusions can be reached regarding this material. Still another type of blood substitute, gelatin, which is a derived protein, was introduced by Hogan and Fischer⁴¹ in 1912. The use of this material was abandoned when it was found that not only did it leave the blood stream very rapidly but that it was also antigenic. Recently, Taylor and Waters⁴² have suggested the use of fish gelatin (isinglass) which is obtained from the swimming bladders of fish. They have obtained encouraging results in animal experiments and state that it is non-antigenic.

The artificial blood substitutes which we have discussed present this common disadvantage, that they cannot be utilized by the body. For this reason, they cannot serve in any way to restore either the hemoglobin or the plasma proteins of the blood. The use of amino acid mixtures for the treatment of hypoproteinemia (Elman⁴³) is based upon the work of Whipple and his co-workers.⁴⁴ Such mixtures are obtained by the hydrolysis of casein and are able to maintain nitrogen equilibrium in man and in lower animals when given by vein or subcutaneously. It is, of course, unnecessary to point out that amino acid mixtures leave the blood stream very rapidly and are therefore not suitable for the replacement of blood volume in conditions of shock.

SUMMARY

A brief consideration has been given of recent advances in our knowledge of blood substitutes. The importance of these studies in relation to clinical practice is emphasized. One conclusion is possible; namely, that the ideal blood substitute has not yet been found.

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DISCUSSION

Dr. Mims Gage (New Orleans): When Dr. Maes gets through presenting a subject there is little left to be said by anyone else.

The use of blood substitutes and the effort of finding one has been gone over, as he said, for many years and the paradox of it is that we have been carrying this around in our own bodies all of

the time. It is necessary sometimes to use certain quantities and frequently we have to have large quantities. At one time we relied on saline or glucose but that did not maintain blood volume. That is what we have been looking for for years; something to maintain blood volume. From typing blood we were able to use blood when found. Frequently it happens that in emergency cases it is impossible to get blood donors of the right type and stored blood is all right for a certain time.

Good pool plasma, as he said, causes very few reactions in the human body. Whether there is loss of blood or not the patient can be treated with plasma.

It is very difficult for us to get plasma. It is difficult for us to have it here in the city. The Army, from accounts, has been having a large number of donors and has a large amount of plasma. Occasionally a person will need a large supply of plasma. The Research Council shows that people who have been burned, where 10 per cent of the surface is burned, require 1000 c. c. of plasma.

Efforts have been made to find a method to use animal plasma, especially bovine, where large quantities of blood can be obtained at slaughter houses. At first there was some reaction but recently they have been able to purify it to such a degree that there is no reaction present.

The Army recently adopted this and make it very cheaply and I am sure we have a great deal to look forward to in emergencies, when we can get all the bovine crystalized albumin necessary to maintain normal blood volume in shock from hemorrhage and trauma. This is one of the greatest things that has been advanced in blood substitutes and is now being produced by the Army.

Dr. Harry A. Davis (in closing): I must agree with Dr. Gage in regard to discussing the presentation which Dr. Maes has just given us. He covered the field so completely that there is little to add; this is particularly so after what Dr. Gage has said.

There are one or two points which I should like to stress. As you all know, human serum or plasma is very expensive. This has resulted in the use of bovine and horse serum albumin. The work described by Dr. Gage has emanated from the Harvard Medical School. This work, which has been going on over a period of some time, has resulted, according to what Dr. Gage said, in the production of an albumin which has properties somewhat similar to human serum albumin. Since we are working on this problem in the Department of Surgery at L. S. U., we are very much interested in knowing what progress Dr. Cohn has been making.

We have been using plasma obtained from horse blood. This has an advantage over bovine blood in that it can be obtained under relatively

aseptic conditions. You can bleed the horse and remove one or two quarts of blood without hurting the animal. So far we have not made sufficient progress in this to report it at this time. Should this material of Dr. Cohn's be adequate to act as a substitute for blood, I think we should all congratulate ourselves in view of the fact that a need for such a substitute is very great, particularly at this time.

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SYMPOSIUM ON ANESTHESIA* THE PHARMACOLOGIC BASIS OF THE SELECTION OF ANESTHESIA

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The formulation of a definite routine in the selection of anesthesia is complicated by a number of variable factors. Consequently, each case presents an individual problem. In the not so distant past, the choice of the drug and technic of administration were no problem because the number of available agents were limited, technics of administration were rudimentary, and the pharmacologic responses other than the immediate anesthetic action were little studied or understood. Surgical procedures were less complex and the criterion of a satisfactory anesthesia was a completely relaxed and unconscious patient. Advances in surgical technics have paved the way to intrathoracic, intracranial, intramediastinal, and other more complex types of surgery. These advances and the recognition of the importance of physiology in surgery have compelled surgeons to become cognizant of more than the narcotic effects of anesthetic drugs. Newer agents and methods of administration have been introduced as a result.

The fact that anesthetic drugs can exert profound physiologic and biochemical changes is now well recognized. Consequently, in choice of anesthesia the foremost consideration is their pharmacologic effects. Pharmacology, however, is con-

cerned primarily with changes of normal function induced by drugs. Most patients who are to be anesthetized have some physio-pathologic change as a result of their disease. This, too, complicates the problem. In addition, other underlying pathology may further complicate the picture. The effects of surgical manipulations, traumatic reflexes, posture, hemorrhage, and fluid loss, may contribute additional and often unpredictable physiologic changes. The skill, dexterity, and temperament of the operator are always considered by the anesthetist when selection of the agent and technic are at his discretion. On the other hand, in those instances where the surgeon relies on a technician as an anesthetist and he, himself, assumes the responsibility for the anesthesia, his selection is influenced by the skill and capability of the particular technician. Assuming the anesthetist and surgeon are both competent and the effects of the surgical procedure are minimal, one may select the drug on the basis of pharmacologic effects and their relationship to the presenting pathology.

TYPES OF ANESTHESIA

The following types of anesthesia, classed according to the routes of administration of the drugs, are at our disposal—inhalation, intravenous, rectal, and regional. Regional, in this discussion, includes infiltration, nerve blocks, and spinal (subarachnoid) block.

Inhalation general anesthesia, still the most reliable and controllable, is induced and maintained with gases or vapors of low-boiling liquids. Three useful gaseous anesthetic drugs are available—nitrous oxide, ethylene, and cyclopropane. Nitrous oxide and ethylene possess almost equal potency and similar pharmacologic effects. The third, or surgical stage of anesthesia, is, for the sake of convenience, divided into four strata or planes which can be readily identified by changes in the nervous, circulatory, and respiratory systems. Neither nitrous oxide nor ethylene is sufficiently potent to produce anesthesia of greater depth than first plane unless reinforced by another drug. First plane anesthesia is

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satisfactory for superficial operations but is not accompanied by any degree of muscular relaxation. Cyclopropane, on the other hand, is sufficiently potent for anesthesia in any plane. The concentration necessary for adequate anesthesia is high for both ethylene (80-85 per cent) and nitrous oxide (85-90 per cent). Unless adequate premedication is used, a certain degree of anoxia accompanies anesthesia with these agents. Anoxia, superimposed upon nitrous oxide or ethylene anesthesia, may be followed by respiratory and circulatory failure and transient or even permanent damage to the central nervous system. Accidents with these agents are as a rule the result of asphyxia produced by too great a reduction of oxygen tension. Individuals not familiar with the pharmacology of these gases expect from them a depth of anesthesia which they are incapable of producing. If adequate oxygen tension cannot be maintained it is best to fortify these gases with ether or some other more potent agent. Cyclopropane, because of its greater potency, is more satisfactory than either nitrous oxide or ethylene. Inasmuch as the concentration for surgical anesthesia is low (20-30 per cent), the remainder of the inhaled mixture may be oxygen if one wishes it. Adequate oxygenation is, therefore, easily maintained. Controversy exists regarding the inhaled concentration of cyclopropane lethal to man. A 40 per cent concentration produces arrest of respiratory movements followed by circulatory failure and death unless artificial respiration is instituted. The drug possesses a wide margin of safety. Cyclopropane, unlike nitrous oxide and ethylene, is sufficiently potent to abolish reflexes and provide relaxation for abdominal surgery. Induction and recovery are rapid with all three gases. Unconsciousness is obtained within two or three minutes. Recovery is equally rapid with nitrous oxide and ethylene but a somewhat longer interval follows cyclopropane, sometimes as long as ten minutes.

The general systemic effects of these gases are negligible as a rule if not complicated by anoxia. They are non-irritating

to the membranes of both the upper and lower respiratory tract, produce little or no secretions, and consequently are ideal in subjects with acute or chronic diseases of the respiratory tract. Cyclopropane, particularly, is best in these conditions as adequate oxygenation is assured. Nitrous oxide and ethylene without anoxia cause no deleterious circulatory effects. Anesthesia complicated by anoxia is accompanied with rises in blood pressure, increased cardiac irritability and changes in rhythm, and other circulatory disturbances. Cyclopropane anesthesia, however, even with adequate oxygenation may be accompanied by circulatory disturbances. A variety of arrhythmias ascribable to an increase in irritability of the automatic tissue of the heart is seen, particularly in the deeper planes of anesthesia. Whether or not a patient with cardiac disease should have cyclopropane is controversial. Patients with cardiovascular diseases have been anesthetized with cyclopropane without any apparent ill effects but deaths suggestive of cardiac failure due to cyclopropane have been recorded. This point requires further study and the last word regarding it has not been written. It is perhaps best to err on the side of conservatism and omit the drug in patients with proved cardiac diseases. Epinephrine and related amines, such as synephrine or neosynephrine, used simultaneously with cyclopropane further increase cardiac irritability and give rise to arrhythmias. In dogs such a combination produces ventricular fibrillation. The combination may be equally as dangerous in man also and should be carefully avoided. Pressor effects, particularly rises in systolic pressure, occasionally accompany cyclopropane anesthesia. These frequently disappear during the course of anesthesia. Clinicians and laboratory investigators cannot state exactly the causes of these rises in blood pressure but feel they are due to complicating factors, such as carbon dioxide excess, and so on, and not to the cyclopropane itself. Cyclopropane is not contraindicated in uncomplicated essential hypertension. The more pronounced rises occur

in subjects with normal tension or mild hypertension.

No significant changes in the chemical constituents of the blood are caused by these gases. Anesthesia complicated by anoxia, however, lowers carbon dioxide combining power, raises blood glucose levels, depletes the liver of glycogen, and disturbs the function of this organ. Hepatic and renal function are ordinarily not disturbed by these drugs.

Nitrous oxide is a non-inflammable inorganic gas; ethylene and cyclopropane are both hydrocarbons which form explosive mixtures with air or oxygen. Nitrous oxide mixed with ether, cyclopropane, or other combustible organic gases and vapors, readily parts with its atom of oxygen and aids combustion should the mixture be ignited.

The currently used volatile liquids include the two halogenated hydrocarbons, chloroform and ethyl chloride, and the two ethers, ethyl ether and vinyl ether or vinethene. The effective inhaled concentrations of vapors of these liquids are lower than those of the aforementioned gases. Adequate oxygenation is allowed even when air is the source of oxygen. Chloroform is the most potent of these and possesses the narrowest margin of safety. A 1½ per cent inhaled concentration produces surgical anesthesia. A 2 per cent inhaled concentration produces respiratory failure. With ether, a 3 to 4 per cent concentration maintains surgical anesthesia; a 7 to 8 per cent concentration produces respiratory failure. Ether possesses a wider margin of safety than chloroform. Vinethene concentrations are comparable to those of ether. All planes of anesthesia may be obtained with these volatile drugs, although depth is difficult to control with vinethene and ethyl chloride. Chloroform and ether are sufficiently potent to cause abolition of reflexes and provide excellent muscular relaxation. The volatile drugs are more irritating to the membranes of the upper and lower respiratory tract than the gases. Secretions are more abundant and occur more frequently, particularly with ether and vinethene. Ir-

ritation is more pronounced with ether than with the three gaseous drugs. In view of these effects on the membranes, their use in inflammatory diseases of the respiratory tract is objectionable. Respiration is stimulated by all these drugs. Perhaps, as explained by Schmidt, the stimulation is an expression of an obtunded cough reflex. The quiet respiration observed with cyclopropane is not seen with ether and the other drugs.

The effects of ether and vinethene on the cardiovascular system are negligible. Ether, from the standpoint of effects on the heart muscle itself, is the best of the available anesthetic agents in cardiac disease. Arrhythmias are less common and less serious when they do occur. The deleterious effects of chloroform on the heart have been so frequently emphasized that one need not mention details here. Ethyl chloride has somewhat the same effects on the cardiovascular system as chloroform, and, like chloroform, is strictly contraindicated in cardiac disease.

Chemical changes in the blood are more pronounced with the volatile drugs than with the gases. A marked fall in carbon dioxide combining power accompanies ether and chloroform anesthesia. The mechanism of this acidosis is not understood, but within a few minutes after induction the disturbance of the acid-base balance appears and persists for several hours after the drug is discontinued. Blood glucose levels are elevated, sometimes over 100 per cent. This disturbance in carbohydrate metabolism and acid-base balance may be interrelated. The increase in glucose, so prominent during ether and chloroform anesthesia, is probably the result of the depletion of glycogen content of the liver. Chloroform and ether decrease liver function, as determined by the excretion of bromsulfalein. On rare occasions, following chloroform, a hepatitis characterized by a central necrosis of the liver, jaundice, fever, and increased amino acids in urine may be seen. Hepatic and renal damage have also been observed in dogs following repeated administrations of vinethene or administrations

accompanied by anoxia. The occurrence of similar lesions in man may be a possibility. A temporary oliguria followed by a compensatory polyuria occurs after ether and chloroform administration. The nitrogenous constituents rise during but fall after the anesthesia. A transient albuminuria may follow in almost half of ether and chloroform anesthetics. These volatile drugs are contraindicated or are used with extreme caution in acidosis, diabetes, and diseases of the liver and kidney.

The volatile agents have a definite inhibiting effect on smooth muscle. Gastric, intestinal, and uterine motility are inhibited. Bronchial musculature is relaxed by ether, chloroform, and vinethene. Some investigators believe anesthetics stimulate portions of the autonomic nervous system. Ether and chloroform are believed to be sympathetic stimulants, cyclopropane parasympathetic. The effect on smooth muscle may be due to this stimulation.

Induction and elimination time of the volatile agents vary. Induction is slowest with ether; first, because it is so irritating and must be given gradually; and second, because the blood-air ratio is high (15/1), so that a high partial pressure is essential during induction to saturate the blood. The blood ether is eliminated slowly because of this high blood-air partition. The water solubility is high so that the watery as well as lipoid tissues absorb it freely and eliminate it slowly. Chloroform, ethyl chloride, and vinethene have lower blood-air ratios and are poorly soluble in water. Their elimination from blood and water is more rapid. Induction with ether, even in expert hands, may consume fifteen minutes. Nitrous oxide, ethylene, vinethene, and ethyl chloride, which are easily inhaled and produce anesthesia within one or two minutes, are used preliminary to the ether to accelerate the induction. The patient is anesthetized first with these so that he may tolerate higher concentrations of ether. Ethyl chloride, widely used as an inducing agent for "open drop" ether, is objectionable because of its cardiac effects. Vinethene, equally as rapid and effective in its

action, is far safer and should replace ethyl chloride as a preliminary to ethyl ether in the "open drop" method.

The vapors of these liquids, with the exception of chloroform, are all inflammable. Chloroform with air or oxygen, however, is oxidized to phosgene by flames, sparks, and cautery.

The advantage which inhalation anesthesia possesses over all others is its controllability. Both the gaseous and volatile agents are chemically inert in the body and are eliminated entirely unchanged by the lungs. The concentration can be gradually increased or decreased so that depth may be varied at will or the drug entirely eliminated by using artificial respiration when overdosage occurs.

Gases must be administered by mechanical appliances. These are composed of meters for gases, vaporizers for volatile liquids, an oxygen supply, and chemical absorption units or other devices to remove carbon dioxide. The closed systems with rebreathing allow a smoother, more even anesthesia and better physiologic control of oxygen and carbon dioxide tensions as well as economy from enclosure of the mixtures. Open methods of vaporization, while safer in inexperienced hands, are not necessarily the best. They are wasteful, are accompanied by uneven anesthesia, poor carbon dioxide control, poor oxygenation, and lowering of body temperature.

INTRAVENOUS ANESTHESIA

Intravenous anesthesia is becoming increasingly popular. The ultra-short-acting barbiturates are the best available drugs for administration by vein. Numerous drugs have been prepared and tried but only two are popular, evipal and pentothal. The simplicity of the intravenous route for administration of drugs, unfortunately, has made general anesthesia available for administration by individuals unfamiliar with the management of complications of anesthesia. It has also encouraged the use of general anesthesia under circumstances and in places where its use is not judicious. The technic, perhaps inadvertently, is frequently selected from the standpoint of the con-

venience of the operator rather than the safety of the patient. Intravenous anesthesia, like all other forms of anesthesia, has its own place in skilled hands. This method of drug administration is not controllable, for once the estimated dose has been injected, should any untoward reaction develop the drug cannot be removed and one must rely upon the mechanisms of detoxification and stimulating drugs. The variation in susceptibility of different individuals to hypnotic drugs does not allow accurate judgment in doses of drugs. Barbiturates are particularly unreliable in this respect. Recovery from the anesthesia with pentothal and evipal is prompt by virtue of the supposed rapid detoxification in tissues. Although it is generally accepted that the liver is the site of destruction of short-acting barbiturates, some evidence exists that pentothal may also be destroyed by other tissues, such as blood plasma and muscles. Ten minutes after injecting an anesthetic dose of pentothal into a dog, it is not detectable in tissues even though hypnosis persists. The pentothal is believed to be partly detoxified almost immediately, but the resulting degradation products remain in the tissues and produce the somnolence which follows recovery from the anesthesia. The usually recommended dose of both of these barbiturates is 1 gram which may provide anesthesia for 20 to 30 minutes, depending upon the individual's susceptibility. A prolonged, undesired, postanesthetic somnolence may accompany the administration of more than one dose. Usually, the operation is made to fit the anesthesia, rather than anesthesia the operation. The signs and depth of anesthesia with these barbiturates are difficult to evaluate. One cannot judge depth by planes as with inhalation anesthesia. The activity of certain reflexes, such as those of the eye, cannot be used as guides with these agents as with inhalation anesthesia. The patient has "enough" as long as he does not stir and pulse and respiration are well maintained, and "too much" if respiration fails. The procedure for administration is somewhat like a sailor steering a ship by "dead reck-

oning." All reflexes are not completely abolished. Laryngeal and pharyngeal reflexes do not disappear. Coughing, stridor and laryngeal spasms are common and cause considerable difficulty in maintenance of free airways and render the technique useless for operations about the neck, pharynx, larynx, or for bronchoscopic studies. A marked depression of respiration accompanies the anesthesia. Blood pressure may fall as a result of depression of vasomotor centers and pulse rate increase. Muscular relaxation is rarely satisfactory. On occasions, the superficial reflexes are not abolished, so that involuntary muscle contractions, twitchings, and fibrillations are common. Attempts of inexperienced individuals to abolish these reflexes completely may lead to overdosage. Acute or chronic respiratory diseases, cardiovascular diseases, the extremes of age, anemias, toxemias, metabolic diseases, liver diseases, are contraindications to either pentothal or evipal.

RECTAL ANESTHESIA

Rectal anesthesia is popular in certain sections of the country. Drugs satisfactory for rectal anesthesia are few in number. The tri-halogenated ethyl alcohols are the most effective available substances. Tribromethanol, a white powder, dissolves in amylene hydrate to form the popular "avertin fluid." The recently introduced trichlorethanol is a liquid possessing approximately the same hypnotic properties as tribromethanol, but is still in the experimental stage. Rectal anesthesia, like intravenous, is also uncontrollable. Ten minutes after the administration of avertin, a deep hypnosis appears which lasts several hours if the patient is not stimulated. Stimuli rouse him since the afferent pathways to the cortex are not completely blocked. The use of a supplemental inhalation or local anesthesia is imperative completely to abolish reflexes. The hypnosis is not a complete anesthesia but is often referred to as "basal anesthesia." A considerable depression of respiration may follow administration of avertin, which, even though no effect is sustained upon the epithelium of the respira-

tory tract, contraindicates its use in respiratory diseases, particularly if vital capacity is lowered. Pharyngeal and laryngeal reflexes remain active unless a supplemental agent is used. A depressor effect causes a fall in the systolic blood pressure shortly after administration. Although the compound is a halogenated alcohol it does not possess the cardiac effects of chloroform as many erroneously believe. The effect on respiration and arterial tension contraindicates its use in cardiovascular diseases. Blood glucose levels are elevated, combining power is lowered, and liver function decreased. A temporary oliguria followed by a compensatory polyuria is common. Both tribrom- and trichlorethanol are detoxified by the liver by conjugation with glucuronic acid and the conjugated product is excreted by the kidneys. The drug is contraindicated in diabetes, acidosis, shock, dehydration, liver and kidney diseases. It cannot be used in rectal or colonic operations because of the method of administration. Avertin is useful in psychically disturbed individuals, and in convulsive states (such as tetanus). Avertin is popular in neurosurgery because unlike the other hypnotic and anesthetic drugs it causes little or no increase in intracranial pressure. Local or general anesthesia must be used as supplementals with this as with other types of operative procedures.

REGIONAL ANESTHESIA

Regional anesthesia may be used in psychically suited subjects in which inhalation and other types are not desired or contraindicated. Injection of a local anesthetic drug, particularly when used with vasoconstrictor substances such as epinephrine, into tissues for infiltration or nerve block may be contraindicated where recuperative powers are poor (as in diabetes), when infection exists, or where the blood supply is poor as a result of diseases of the peripheral vessels (as in arteriosclerosis, Raynaud's disease, and thrombo-angiitis obliterans). Spinal, or subarachnoid, block may be contraindicated in certain systemic diseases, as it may be accompanied by serious physiologic disturbances. Subarach-

noid block is also uncontrollable and the duration of action variable and nonpredictable. The muscular relaxation obtained, however, is difficult to duplicate by any other technic. This feature and the fact that the anesthesia can be induced by the surgeon himself are responsible for the popularity of the block. One differentiates between "high spinal," in which the effects of the block extend above the costal margin usually accompanied by intercostal paralysis, and "low spinal," which is anesthesia below the diaphragm with no intercostal paralysis. The complication which occurs most frequently during spinal anesthesia is the circulatory depression manifested by varying degrees of falls in blood pressure. The mechanism causing this fall has been the subject of much study and controversy. The generally accepted older belief is that a stagnation occurs from arteriolar dilatation from paralysis of sympathetic fibers. Recent work indicates that the arterioles of the viscera are endowed with an autonomous control and the fall in blood pressure results from capillary and venous failure due to the relaxation and loss of tone of the muscles and decreased venous return to the heart. The circulatory changes in unoperated man are characterized by a fall in systolic pressure, a well maintained diastolic, decrease in pulse pressure, fall in venous blood pressure, and a bradycardia. The bradycardia (not as apparent when ephedrine is used) is the result of sympathetic paralysis and predominance of the vagi which remain active. A reduction in cardiac output, a prolongation of circulation time, and a widening of the arteriovenous difference are other circulatory changes. The widened arteriovenous difference may enhance tissue anoxia. Changes in blood volume, blood viscosity, and hematocrit readings are slight. Vasoconstrictor drugs effectively combat this circulatory collapse which differs from shock. In the latter condition fluid volume is reduced, hemoconcentration, increased blood viscosity, and decreased blood volume occur. Circulatory collapse during spinal anesthesia occurs more frequently in sub-

jects with cardiovascular diseases, such as hypertension or arteriosclerosis. Any drug or procedure which may insult the circulatory system, as does spinal anesthesia, obviously is contraindicated in subjects with cardiovascular disease. "High spinal" anesthesia certainly should never be used. Although nothing is inhaled and irritation of tissues of the respiratory tract is absent, postoperative respiratory complications are as frequent in this type of anesthesia as in general. Statistics show that a higher incidence accompanies "high spinal." The reduction of minute-volume exchange, which may accompany intercostal paralysis, particularly in operations about the diaphragm, contraindicates its use where there is reduced vital capacity. Decreases in renal and hepatic function and change in blood chemical constituents during spinal anesthesia are insignificant. Septicemia and central nervous system diseases (particularly those involving the spinal cord) are contraindications for this type of block. The relative toxicity if the accepted drugs are employed is unimportant since the amounts used are small. The extent, intensity, and duration of the physiologic changes are the important considerations. Anesthesia induced with procaine lasts approximately one hour, metycaine one and a half hours, pontocaine two or more hours, and nupercaine two and a half to as long as five hours.

MEDICATION PRIOR TO ANESTHESIA

Satisfactory anesthesia cannot be administered without premedication. The needs for premedication are fourfold: (1) to induce psychic sedation and minimize excitement; (2) to decrease metabolism so that less oxygen is required—a necessity for nitrous oxide and ethylene; (3) to diminish mucous and other secretions; and (4) to provide prophylactic effects against some anticipated undesired action of a drug other than the anesthetic action. The alkaloids derived from opium, particularly morphine, dilaudid and pantopon solutions, best provide psychic sedation and desired suppression of metabolism. Barbiturates are not satisfactory substitutes for the opium alka-

loids because they do not decrease the metabolic rate, but they may be used as an adjunct for psychic sedation since they depress the cortex. Scopolamine and atropine, both drugs of the belladonna group, adequately eliminate objectionable secretions. Both have a stimulating action upon the central nervous system but paralyze the myoneural substance of the parasympathetic nerve endings. The period of cortical stimulation due to scopolamine is brief. It is followed by a cortical depression (not so with atropine) which is desirable when combined with the cortical effects of morphine. The medullary stimulation persists. The peripheral effects of scopolamine are twice those of atropine. Scopolamine and hyoscine are identical. Neither atropine nor scopolamine is a habit-forming drug. The doses of premedicating drugs vary with the metabolic rate. Higher doses are tolerated when the metabolic rate is high, at puberty, in fever, and thyrotoxicosis. Old people, therefore, require smaller doses. The optimum scopolamine-morphine ratio has been found to be 1/25. Thus, the average dose is 1/100 grain to 1/4 of morphine. The optimum time for administering has been found to be one to one and a half hours before induction of anesthesia. The practice of ordering premedication "on the stretcher" or "on call" should be discouraged because the drugs rarely accomplish the purpose for which they were intended. Premedication in this manner is almost the equivalent of no premedication at all. Premedication is as necessary in regional as in general anesthesia. Psychic sedation is essential for complete success of the block. Besides, in event of failure of the block, the patient is prepared for general anesthesia. Many anesthetists omit the opium alkaloids in premedication for avertin or intravenous anesthesia with barbiturates because of accentuation of the respiratory depression characteristic of these drugs.

Barbiturates, preferably the short-acting type, such as nembutal or seconal, are given before the administration of all local anesthetic drugs as a prophylaxis in the event of rapid absorption or toxic response, or to

minimize the effects of an accidental intravenous injection. Therapeutic doses, orally administered one hour before anesthesia, are recommended.

Ephedrine by intramuscular injection (3/4 grain) is used prophylactically before induction of spinal anesthesia to forestall the expected fall in blood pressure. Many anesthesiologists withhold ephedrine and administer it only if a blood pressure fall seems imminent. Atropine in therapeutic doses (1/150 gr.) is given preliminary to intravenous anesthesia to minimize vagal effects and reflexes in the trachea, larynx, and bronchi.

SUMMARY

The different types of anesthetics have been reviewed from the point of view of their pharmacologic action and of their availability for various operations.

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ANESTHESIA IN HEART DISEASE

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The question of the advisability and the choice of anesthesia in the presence of organic heart disease is one that has received frequent consideration. The problem has many phases that must be considered separately.

At the outset, it must be assumed that the diagnosis is correct and that there is a definite indication for operation. One has only to consider a few situations to realize that symptoms and signs may arise in a patient with organic heart disease which will mimic acute surgical conditions although they are entirely cardiac in origin and should be managed medically. Many of us have seen rightsided abdominal pain with tenderness, rigidity, fever, nausea, leukocytosis and even jaundice resembling acute appendicitis or cholecystitis due to rightsided cardiac failure with congestion of the viscera in a patient with organic heart disease. Or an acute coronary occlusion or dissecting aneurysm may produce the signs and symptoms of an acute perforated peptic ulcer, pancreatitis, intestinal obstruction, cholecystitis, cholelithiasis or diaphragmatic hernia. In children with acute rheumatic fever there may be acute abdominal pain with nausea, vomiting, fever, leukocytosis and localized tenderness very difficult or even impossible to differentiate from acute appendicitis. Since it is likewise possible for a chronic cardiac to have such acute surgical complications or for acute surgical conditions to imitate cardiac emergencies, the differential diagnosis is most important and not always easy. An evaluation of the presence or absence of cardiac signs with the additional information furnished by such procedures as circulation time, venous pressure, x-ray and the electrocardiogram is usually necessary. This calls for the close cooperation

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of the internist and surgeon in such matters.

When it becomes evident that a surgical problem exists in a patient known to have cardiac disease, the desirability of the surgical procedure must be determined. How necessary is an operation? What will it do for the patient? Will the successful operation increase the life expectancy of the individual? These questions must be carefully considered and decided. Of course if a surgical emergency exists, no choice exists and one must then decide what can be done to assist in its successful execution. Between the completely elective procedure which involves too much risk in the particular cardiac patient without offering sufficient benefit and the emergency procedure which is a matter of life or death, there lies a great group where the decision is perhaps most difficult. Some patients with serious organic heart disease may be improved as to their cardiac status by operation, such as thyrocardiacs, or in coronary arteriosclerosis with angina and complicating chronic cholecystitis or cholelithiasis, not to mention of course the cardiac surgery itself in constrictive pericarditis or patent ductus arteriosus. The risks for or against an operation must be carefully weighed and require a careful evaluation of the cardiac status of the individual. Some of these factors will be considered subsequently.

If the patient with heart disease is to be operated upon, everything must be done to minimize the risk involved. This calls for careful preoperative preparation and treatment if possible, proper choice of an anesthetic by a competent anesthetist, good surgery and adequate postoperative observation and management. Here again it is imperative that there be close cooperation between the internist, the surgeon and the anesthetist.

There are certain types of cardiac abnormalities which greatly increase the risk of operation. Patients with congestive heart failure regardless of etiology or degree, coronary arteriosclerosis with or with-

out angina pectoris, recent coronary occlusion with myocardial infarction, bundle branch block, complete heart block, persistent pulsus alternans and syphilitic aortic disease all are markedly increased surgical risks. In this type of patient operation should be avoided or postponed if possible. If the operation can be postponed, the congestive failure may be treated and improved. At least three months should elapse after a coronary occlusion with infarction, for that is considered the usual time for myocardial healing to occur. It is difficult or impossible to determine the best time to operate upon a patient with angina pectoris, because of course the individual may have an attack or a coronary occlusion at any time and begins with an insufficient coronary circulation. The same is true of patients with evidence of coronary arteriosclerosis without angina, but showing bundle branch block or complete heart block in the electrocardiogram. These patients may be rather easily overlooked since they may have few or no symptoms and signs of cardiac disease. The patients with complete heart block may well have an Adams-Stokes attack. The presence of persistent pulsus alternans is evidence of serious myocardial damage and the individual with syphilitic aortic disease, because of involvement of the coronary ostia, presents the same risks as the coronary arteriosclerotic group.

In the absence of these serious cardiac conditions, the presence of other cardiac abnormalities does not necessarily increase the surgical risk. With evidence of hypertension, chronic valvular disease of rheumatic, congenital or arteriosclerotic origin, and cardiac arrhythmias such as auricular fibrillation, auricular flutter or premature contractions, the patient may be operated upon without much increased risk, providing the circulation is efficient and the anesthesia and operation are skillfully executed. The state of the myocardium is here the important consideration, and this is determined by the ability of the patient to carry on ordinary activity without evidence of circulatory embarrassment. Here the symp-

toms are very important to determine the presence or absence of cardiac failure, then the signs of such failure, and of least importance the x-ray and the electrocardiogram. An electrocardiogram taken to determine the preoperative status of a patient is of no value unless correlated with a proper history and physical examination.

Hypertension does not greatly increase surgical risk alone. However, when it is associated with chronic nephritis the mortality is said to increase from about 4.9 per cent in non-nephritic to 15 per cent in nephritic patients.

Chronic valvular defects are relatively unimportant if myocardial efficiency is satisfactory. The only exception to this statement is the presence of mitral stenosis which might cause emboli as the result of sterile mural thrombi present. Auricular fibrillation may also give rise to the same complication for that reason.

In a well compensated patient with cardiac disease, a surgical procedure apparently places no increased burden upon the heart if the patient is properly prepared, is efficiently anesthetized and skillfully operated upon. The burden of operation under such conditions is no greater upon the heart than ordinary activity. It has been estimated that the increased surgical risk is not over 5 per cent. It is surprising how well even serious risks tolerate operation under proper conditions. In an analysis of 494 operations in patients with heart disease, Butler, Feeney and Levine found the mortality to be 12.1 per cent. Of these deaths they estimated that 6.3 per cent might have occurred without the operation. In 35 patients with anginal heart failure the mortality was 7.7 per cent, while in 20 patients with coronary occlusion the mortality was 40 per cent, and with congestive failure a mortality of 17 per cent.

The preoperative preparation or treatment is important. If cardiac failure is present digitalis and other measures should be employed to attempt to restore compensation prior to the operation, rapidly or more slowly depending upon the time element involved. In the presence of auricu-

lar fibrillation or auricular flutter, digitalis is also indicated to control these arrhythmias. With these exceptions digitalis should be contraindicated preoperatively as doing no good and possibly doing harm by producing premature contractions, coupling, auricular fibrillation or heart block. It does not "tone up" cardiac muscle or prevent postoperative falls in blood pressure. In addition, it may interfere with the necessary emergency administration of large doses of digitalis or strophanthin during or immediately after the operation. If possible it is preferable to restore a patient to cardiac compensation and then allow him up and about for a few days prior to the operation, rather than preceding the operation by a long period of bed rest. In patients with or suspected of having coronary artery sclerosis it has been suggested that the preoperative use of one of the xanthine vasodilators, like aminophyllin or calpurate, may be helpful and can do no harm. Every effort should be made to shield the patient from emotional stimuli, and the operation should be as short and as free from shock as possible. The usual recommended preoperative medication consists of one of the barbiturates, phenobarbital, nembutal or seconal 3 grains, the night before and morphine grain 1/4 or grain 1/6, and scopolamine grain 1/100 or grain 1/150 about one to one and a half hours before the operation. Many feel that scopolamine is to be preferred to atropine because it has more effect on the control of mucous secretion. It would seem desirable to allow the anesthetist, after consulting the surgeon and internist, to order such preoperative medication as indicated for the anesthetic to be administered. During the operation the position of the patient is often important. The Trendelenburg position should be avoided since it alters the position of the heart and decreases pulmonary ventilation. Asphyxia, shock and hemorrhage should be carefully avoided. When abnormal rhythms such as paroxysmal tachycardia, auricular fibrillation or flutter occur during or after the operation, they should be controlled by carotid sinus stimulation, quinidine or

digitalis as indicated. Postoperatively the patient should be watched carefully by a competent observer for shock or other complications and treated with carbon dioxide and oxygen and other stimulants such as metrazol, coramine, caffeine or strychnine.

TYPE OF ANESTHESIA

The question of the anesthetic now arises. Marvin has stated that "it is far more important to select the proper anesthetist than it is to select the proper anesthetic." Certainly the experience and skill of an anesthetist with a particular anesthetic determines to a large extent its choice. Likewise, there is still considerable controversy on this question and it is usually a matter of personal experience and choice. Nevertheless, there are some factors to be considered, and before discussing the various anesthetics let me mention some of the causes of surgical deaths. Death is due to complete cardiac anoxia. Once the heart stops beating it may be stimulated to contraction again but this will not continue until sufficient oxygen is supplied. Guedel states that circulatory accidents during anesthesia are broadly due to: (1) increased blood pressure; (2) decreased blood pressure, and (3) ventricular fibrillation. These three methods of production of complications will not be discussed in detail. Suffice it to say that any struggling or emotional excitement can produce marked rises in blood pressure which might result in acute or gradual cardiac dilatation with failure, rupture or an arteriosclerotic vessel or multiple cerebral petechial hemorrhages. A fall in blood pressure producing an insufficient supply of oxygen to the heart with the production of arrhythmia and death may be due either to hemorrhage or shock. The production of ventricular fibrillation may be produced by the anesthetic agent itself alone or by increasing the cardiac irritability to which is added the effect of humoral influences acting during the anesthesia. Adriani has pointed out that during an anesthesia in any individual there may arise arrhythmias, decreased cardiac output predisposing to car-

diac failure, bradycardia, cerebral accident, hypertension, hypotension, pulmonary edema or ventricular fibrillation. Post-anesthetic sequelae are coronary occlusion, arrhythmias, bradycardia, shock, hypertension, and cerebral accidents. In a patient with cardiac disease, therefore, it behooves us to consider the effects of the possible complications and their effect on a damaged circulatory system, which certainly increases their probability and seriousness. We must also consider the frequency with which the various anesthetics produce such effects.

Chloroform can be considered and dismissed briefly. It is a direct cardiac muscle depressant and is dangerous even to a healthy heart. It is seldom employed. The blood pressure usually falls, ventricular fibrillation is possible at the onset of the anesthesia, myocardial irritability is increased and the cardiac output is decreased, just to mention a few effects.

Local anesthesia might be considered on first glance as ideal. It must be realized that the blood pressure often rises with small doses, and falls with larger doses. Novocaine or its derivatives are myocardial poisons and therefore not free of danger. Even more important is the fact that with a local anesthetic the element of emotional stimuli cannot be overcome and fear and excitement cannot adequately be removed in the cardiac patient. Occasionally, for short procedures in some patients it may be useful. Except for that, a properly chosen inhalation anesthetic offers no greater risk and has many recommendations. If there are contraindications to an inhalation anesthesia, such as pulmonary disease or diabetes, it might be useful.

Spinal anesthesia causes a systolic fall of the blood pressure with a diastolic pressure that is well maintained. This results in a decreased pulse pressure, decreased cardiac output and often an associated bradycardia with shock. Because of this fall in blood pressure it should be contraindicated in individuals with hypertension certainly, and in individuals, I believe, who show any evidence of cardiovascular dis-

ease. The objection of emotional stimuli is likewise not removed by spinal. The liberation of adrenalin into the circulation may prove harmful, especially in the presence of coronary sclerosis, producing angina pectoris or coronary thrombosis. The fear and excitement increase the metabolic rate with resulting stress on an already damaged heart, and cardiac arrhythmias may also result.

I believe cyclopropane to be definitely contraindicated in all cardiovascular disease. Its most serious objection is the tendency to produce cardiac arrhythmia, and ventricular fibrillation especially. This has been shown to occur frequently and I cannot feel that such arrhythmias that occur, such as displaced pacemaker, vagus escape, heart block, ventricular tachycardia, nodal and ventricular prematures, auricular flutter and auricular fibrillation, not to mention ventricular fibrillation, can do no harm to a damaged myocardium. If it is not agreed that it should be completely contraindicated in cardiovascular disease, certainly it should not be used in the presence of any of the arrhythmias or a history of an arrhythmia. If it is used epinephrine is contraindicated with it because of the possibility of precipitating ventricular fibrillation. Robbins has shown that the preoperative use of the barbiturates instead of morphine in dogs prevents the occurrence of ventricular fibrillation with cyclopropane, but this deserves more investigation in man before its verification. Perhaps this may remove this serious objection to the drug. The blood pressure may also either rise or fall. Postoperative shock also occurs frequently.

Ethylene does not affect the cardiac rate, nor is the blood pressure much affected. It does not produce arrhythmias, has no direct effect on the cardiac muscle. Ethylene and oxygen is apparently a very satisfactory anesthetic from a cardiac standpoint and some men prefer it. It does not give the degree of relaxation usually desired, however, and has a relative potency compared to ether and cyclopropane of 25 per cent.

Ether causes an acceleration of the cardiac rate. Cardiac arrhythmias are rare in light ether anesthesia and when they do occur they are from the auricle or the A-V node and seldom from the ventricle. Ventricular tachycardia and ventricular fibrillation rarely occurs. It can be combined with a high oxygen concentration.

SUMMARY

It appears to me that ether still remains the best anesthetic available for use in patients with heart disease. Either by the drop method or preferably by the closed method with accurate control of oxygen content it seems to be the anesthetic of choice. Perhaps the best anesthetic would be the combination of ethylene, ether and oxygen by the closed method, beginning with ethylene-oxygen for a more rapid induction and continuing the anesthetic with ether-oxygen. The post-anesthesia administration of carbon dioxide and oxygen might well avoid the objection of the long period of recovery. Ether is contraindicated, of course, in the presence of acidosis, pulmonary disease and increased intracranial pressure. Here the decision must be made as to the relative seriousness of the complications and the choice based on that decision.

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ANESTHESIA IN OBSTETRICS

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Within recent years there has been a tendency toward a more conservative attitude in pain relief during labor, and women and obstetricians are beginning to realize the importance of relying upon the anesthesiologist's judgment in selecting the type of anesthesia best suited to their particular case.

It is beyond the scope of this paper to discuss all the agents used for analgesia during the first stage of labor, and will be limited to those used for pain relief of the second and third stages.

The patient in labor is different from others in two outstanding ways. First, the anesthetic must be given when she is ready to deliver. There is little time for deliberation or preoperative preparation. Seldom does she have the advantage of a hypodermic of atropine or scopolamine to prohibit the flow of saliva. More often than not she has a full stomach, because just before pains began she had a large meal. It matters not that the meal was taken several hours prior to delivery, as once labor has started, digestive processes cease and food seldom leaves the stomach.

Secondly, there are two individuals for whose safety we are responsible and both must constantly receive an adequate supply of oxygen. This oxygen supply is of most important consideration when administering an obstetrical anesthetic. Some degrees of anoxemia which the mother can tolerate without deleterious effect are fatal to the baby, because the blood of the baby is less saturated with oxygen than that of the mother.

There should be a suction apparatus at hand so that mucous or vomitus can be removed from the pharynx to prevent aspiration of foreign material into the trachea and obstruction of the larynx which results in varying degrees of anoxemia.

Anesthetic agents which require the reduction of oxygen to produce the desired relaxation should not be used. Mechanical

airways should be available which may be used to prevent obstruction to respiration due to falling back of the tongue and laryngeal spasm. Regardless of what mixture the gas machine is regulated to deliver, adequate oxygenation is not possible if the air passages are obstructed in any manner.

A most noticeable and valuable sign of anoxia is cyanosis, so the patient's color should be watched closely at all times. However, there is one grave pitfall that should be remembered. The anemic patient will present little or no cyanosis because a relatively high concentration of hemoglobin is necessary for this sign to become manifest.

The agent selected for use in the second stage of labor depends somewhat on the analgesic drugs which the patient has received. If large doses of the barbiturates and morphine have been given for pain relief, it is not wise to administer an agent which will further depress respiration.

The ideal anesthetic agent should have the following properties: (1) Pleasing the patient; (2) induction and recovery rapid; (3) easily controllable and potent enough to produce muscular relaxation; (4) safe for mother and child and be effective in the presence of high oxygen concentration; (5) relieve restlessness and not retard labor; (6) have no immediate or late deleterious effects on the mother or baby.

No one agent has all these properties; however, we have at our command several drugs, each of which possesses one or more of the advantages enumerated above.

Young, healthy, so-called normal patients, in labor, who present a good risk, will come through with their lives regardless of the anesthetic used. For patients who present a substandard risk the ability of the anesthesiologist to select and use the proper agent may mean the difference between life and death of the mother and baby. For these patients the agent or combination of agents which will achieve the proper depth of anesthesia and be least toxic to vital organs should be selected.

The anesthetic agents used in labor may be divided into general and peripheral.

GENERAL AGENTS

A. LIQUIDS

(1) *Chloroform* was first used by Simpson in 1847. It has a sweetish, pleasant odor and is not objectionable to the patient. The potency is great and induction is rapid. Any degree of relaxation may be obtained. It is non-inflammable and may be given by the simple drop method. In spite of these advantages, it should not be used because of the small margin of safety, and frequent immediate toxic effect on the heart muscle, and late toxic effect on the liver, occasionally resulting in fatality. If used at all it should be limited to intermittent administration during pains. The mask should be kept away from the face to allow for free mixture with air. It is not safe for long periods of time or deep anesthesia.

(2) *Vinyl ether* (vinethene) is four times more potent than ethyl ether and one and one-half times more potent than chloroform. In light anesthesia and analgesia it does not depress the muscle tone of the uterus or intestines. Induction and recovery are rapid. The odor is that of garlic; and the vapor is irritating to the respiratory tract, causing a free flow of thick mucous and saliva.

Its margin of safety is small and even planes of anesthesia are difficult to maintain because of its extreme potency and short induction period.

Bourne advocates the use of a mixture of 25 per cent vinyl ether and 75 per cent ethyl ether to take place of the much more slowly acting ethyl ether and the very much more toxic chloroform, because of ease of administration, rapidity of action, satisfactory maintenance of any degree of narcosis and early recovery.

It has not been possible for me to get such excellent results with vinyl ether alone or in combination with ethyl ether, and I do not recommend its use if other more desirable agents are available.

(3) *Ethyl ether* is one of the most commonly used agents. Its properties are well known and need not be enumerated.

Labor pains and tone of the uterine muscle are depressed by ether in proportion to

the depth of anesthesia. Because of this it is the ideal agent to be used for podalic version. The combination of enough ether, adrenalin intramuscularly, and sufficient time will relax all but the most severely contracted uteri and allow for a relatively easy podalic version. This point cannot be stressed too greatly, as I have too often seen the baby killed by means of version attempted in an unrelaxed uterus, because an anesthetic agent of insufficient potency was used or the obstetrician failed to wait long enough to allow the ether to take effect. As soon as version has been completed, ether should be stopped and a less toxic agent used to continue anesthesia.

Ether may be used intermittently for analgesia during pains, but is not as satisfactory as the gases because of its slower action and depressing effect on uterine tone. It may be added to the gas mixture if sufficient relaxation is not obtained.

Ether has very little depressing effect on the baby and the oxygen saturation of his blood is not appreciably decreased.

It is slightly toxic to parenchymatous organs and irritating to the respiratory mucous membranes. The contraindications to the use of ether are: (a) toxemias of renal or hepatic origin; (b) diseases of the lungs and upper respiratory passages; (c) diabetes, because it increases the blood sugar concentration and decreases the alkaline reserve, and (d) dehydration.

(4) The *barbiturates* are put under this classification because they are given in liquid form and produce general anesthesia.

The long acting barbiturates such as sodium amytal and nembutal are used to stop the convulsions of eclampsia. They are given intravenously in sufficient dosage to produce sleep for several hours. The short acting ones, evipal and sodium pentothal, are useful for extremely short procedures, such as examination or rupture of the membranes, and may be given as premedication prior to operative delivery. They should not be used as a total anesthetic because in the larger doses which are required respiration is depressed to such a degree that anoxemia frequently results.

GASES

Gas anesthesia in general proves more satisfactory than other methods in that it is more flexible and offers a more accurate control of the oxygen content of the maternal fetal blood.

(1) *Nitrous oxide*, an almost odorless non-inflammable gas, produces first plane anesthesia in mixtures of 85 to 90 per cent with oxygen. It is a widely used agent in obstetrics because of its rapid induction and recovery time, and extremely short period of nausea. It does not retard contractions nor decrease uterine tone. Nitrous oxide is eliminated unchanged through the lungs and per se has no deleterious effects on any tissues of the body.

It does not produce relaxation in mixtures containing adequate oxygen and at times even first plane anesthesia is difficult to obtain. This causes the anesthetist to decrease the oxygen percentage to dangerously low levels.

Courville has reported several cases of lesions of the brain following the usual administration of nitrous oxide. He blames anoxia, which so frequently occurs during its administration.

Since the fetus cannot tolerate anoxemia as well as the mother, nitrous oxide should only be used intermittently for pain relief in spontaneous deliveries and never in mixtures of less than 15 per cent oxygen. If operative delivery or relaxation is necessary it is best to change to a more potent agent.

(2) *Ethylene*, a non-irritating colorless gas with an unpleasant odor and taste, is inflammable. It is not altered or combined in the body and in major part is eliminated through the lungs within two minutes. It is non-toxic to vital organs and has very little effect on blood chemistry.

Analgesia is obtained with mixtures of 20 to 35 per cent, unconsciousness with 60 per cent, and anesthesia with 80 to 90 per cent. There is usually a mild degree of anoxia present, but first plane anesthesia may be maintained with safety for the mother and fetus. Administration in 75 per cent concentration during pains re-

sults in very satisfactory analgesia. The tone and contractions of the uterus are not decreased and the patient can bear down more effectively because of the relief from pain. When the head comes over the perineum or if forceps are applied, adequate anesthesia can be obtained by increasing the concentration to 80 or 85 per cent. This permits an adequate amount of oxygen for the mother and baby.

If manipulations are contemplated which require uterine or muscular relaxation, ether should be added. It is not safe and rarely possible to get relaxation with the use of ethylene alone.

Ethylene approaches the ideal agent for obstetrical anesthesia and may be used with safety for the patient with toxemia of renal or hepatic origin. It may be used for the diabetic mother, as it increases the blood sugar very little and has a minimum effect on the alkaline reserve.

Thus, unless muscular relaxation is necessary, ethylene is the agent of choice for patients in labor.

(3) *Cyclopropane* is a highly inflammable and explosive gas with a slightly sweet, pungent odor, and is non-irritating to mucous membranes.

It is eliminated unchanged through the lungs, is non-toxic to vital organs with possibly one exception. In high concentrations it may increase the irritability of the heart muscle and it is possible that ventricular fibrillation may result from the simultaneous use of adrenalin. Fortunately, however, I have never seen this occur.

It is anesthetic in concentrations of 10 per cent and upwards. It is a respiratory depressant causing respiratory paralysis in concentrations of 40 per cent and above. With artificial respiration concentrations as high as 75 per cent can usually be tolerated. Good muscular relaxation may be produced with mixtures as low as 20 per cent but at times much greater concentrations are necessary.

Because of its high potency an abundance of oxygen is always present in the anesthetic mixture, resulting in a very high saturation of the maternal and fetal blood.

Due to the extremely high cost of cyclopropane it must be administered in a closed system and is not easily adaptable for intermittent use. It is impossible to maintain a constant mixture in the breathing bag, because each time the patient breathes into it the gases are diluted with air.

Cyclopropane is an excellent anesthetic for all types of operative delivery except podalic version. It is not applicable for version because uterine relaxation is obtained only in the presence of extremely high concentrations, usually past respiratory arrest and frequently an excessive flow of thick, tenacious mucus occurs as the result of central stimulation. Furthermore, adrenalin is frequently used to aid uterine relaxation, and this drug should not be given when cyclopropane is being administered.

It is the inhalation agent of choice for cesarean section. Skeletal muscular relaxation is good with maintenance of uterine and intestinal tone. Recovery is rapid and because of the high oxygen content of the blood the baby seldom needs resuscitation. The postoperative period of nausea and vomiting is usually very short.

Morgan reported 100 cases of cesarean section under cyclopropane and compared them with 100 similar cases under other types of anesthesia, principally ethylene and ether. He found a marked improvement in the postoperative course of the cyclopropane cases, particularly in regard to the factor of nausea, vomiting and abdominal distention. The cyclopropane cases required an average of three days less hospitalization. He presumed that less uterine hemorrhage and less disturbance to bowel function were the principal reasons for smoother convalescence following cyclopropane anesthesia.

Because cyclopropane is non-toxic and non-irritating, it may be used with safety for patients with toxemia, pulmonary and mild cardiac disease.

II. PERIPHERAL ANESTHESIA

A. Local infiltration is reserved for operative delivery of the poor risk patients. Those with severe toxemia, shock or heart failure are more safely delivered with local

infiltration of the tissues which are to be cut. It may be necessary to supplement this anesthesia with 50 per cent nitrous oxide or ethylene to allay discomfort, apprehension and fear.

B. Caudal block comprises insertion of a needle into the caudal canal through which is deposited 20 to 100 c. c. of the anesthetic solution. This results in an epidural anesthetic, the height of which depends on the amount of solution injected.

Some obstetricians use this anesthetic routinely and claim excellent results. I feel that it has definite advantages in selected cases but is not ideal for all patients. The advantages are that there is no effect on the baby; usually no effect on the tone or contractions of the uterus; no systemic effects on the mother; excellent relaxation of the vagina and perineal muscles; very little drop in blood pressure; and the patient is awake and able to aid delivery by contracting her abdominal muscles.

The disadvantages are that it is effective in only 85 per cent of cases; induction of anesthesia is slow, 15 to 30 minutes; it is not always possible to locate the caudal hiatus; the duration of anesthesia is limited to 40 to 60 minutes; and systemic reactions are possible, due to hypersensitivity or injection of the drug into the circulation.

This type of anesthesia may be used to advantage for patients with severe upper respiratory infections, toxemia, pulmonary or cardiac diseases.

C. Spinal anesthesia is more free from toxicity to vital organs, most prompt, least time consuming, simplest to apply and the most efficient of all the peripheral anesthetics. There is excellent relaxation, good uterine tone, diminished blood loss, decreased nausea and vomiting and no need of resuscitation of the baby.

The height of anesthesia may be kept relatively low and the dosage required is small. Thus, there is little disturbance to circulation.

The objectionable features are that many people fear this type of anesthetic; the duration is definitely limited and the parturient patient not easily manipulated.

It has proved very satisfactory for cesarean section and other types of operative delivery when there has been some contra-indication to an inhalation anesthetic.

The contraindications to spinal anesthesia are extreme arterial tensions; pathology of the spinal cord; cutaneous infection at the proposed site of puncture; septicemia; shock and anemia.

The patient who presents a very poor risk is no fit subject for spinal anesthesia, and in the past it had become unpopular because it was frequently reserved for just such cases. At present, the contraindications are better understood and it has been proved to be serviceable and safe.

SUMMARY

For normal, healthy obstetrical patients any of the commonly used anesthetic agents produce fairly satisfactory results, if administered properly.

If all the modern anesthetic agents are available it is advisable to use ethylene for the general run of labor cases; cyclopropane or spinal for operative delivery when relaxation is desired; and ether for internal podalic version.

The so called 'poor risk' cases present a more difficult problem. The procedure which is contemplated must be considered, and the agent selected which will give the necessary depth of anesthesia with least toxicity and having the least deleterious effect on the mother and fetus.

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DISCUSSION

Dr. James D. Rives (New Orleans): There is one point which has been passed without comment by each of the essayists. Some of us, including myself, have strong convictions as to what is the anesthetic of choice in the presence of respiratory tract infections. Most people accept without question the common belief that inhalation anesthesia, especially with ether, is contraindicated under such circumstances. As a matter of fact, there is no statistical evidence to show that ether is more dangerous than other inhalation anesthetics nor that inhalation anesthetics are more dangerous than spinal anesthetics. In fact, there is some statistical evidence that spinal anesthesia is the most dangerous of all. In the January 1942 issue of the *Archives of Surgery*, there are two articles by John Lyford of Baltimore that are quite illuminating. The first article reports that in 631 patients without respiratory tract infections who were subjected to abdominal operations, the incidence of postoperative complications of the respiratory tract was as follows: 242 patients with ether anesthesia, 5.8 per cent; 163 with cyclopropane anesthesia, 4.9 per cent; 226 with spinal anesthesia, 7.5 per cent. The difference in incidence of respiratory tract complications was not large enough to be significant but such difference as there was would indicate that spinal anesthesia is the most dangerous in this respect. The second article reports that, in 120 patients with common low grade infections of the upper respiratory tract who were subjected to abdominal operations, the incidence of postoperative complications of the respiratory tract was as follows: 37 with ether anesthesia, 13.5 per cent; 40 with cyclopropane, 17.5 per cent; and 43 with spinal, 39.5 per cent.

It is interesting to note that in a recent symposium on spinal anesthesia Churchill stated that he uses ether as the anesthetic of choice in thoracic operations, including those on patients with pulmonary tuberculosis.

I would not have you believe that I think the presence of respiratory tract infections should not influence our choice of anesthetics. As a matter of fact, I suspect that ether is undesirable under these circumstances on account of its irritant effect on the mucous membranes of the respiratory

tract. The point I wish to make is that there is not at the present time any statistical evidence to support this belief and that until such evidence is available the matter should not be considered closed.

Dr. J. A. Danna (New Orleans): When I first came into the medical field we were using chloroform only as a general anesthetic. In 1905 I thought I would find out why it was that we felt that way about chloroform in New Orleans and generally throughout the South, while in the North they used ether almost exclusively. I visited clinics in Baltimore, Philadelphia, New York, Boston, Chicago and the Mayo Clinic. I came back and showed the interns at Charity Hospital how to give ether as done in the Mayo Clinic. From then on ether was the anesthetic generally used. My interest in anesthesia goes back that far.

Not very long after we began to use ether I had occasion to remove a large sequestrum consisting of almost all of the lower jaw, from angle to angle, in a patient, and after I washed my hands and the patient was still in the operating room, I noticed a lump under the jaw which was not draining and I felt I should stick a knife in it. The light anesthetic given had practically worn away. I knew that with chloroform, unless the patient was thoroughly under, one could not make an incision. I had the nurses hold him down and made a crucial incision under the chin. He did not budge in spite of the fact that he was nearly awake.

Quite a number of years after that, I had occasion to do an exploratory operation on a brain case, osteo-plastic flap and so forth—which took over two hours. I was afraid of the patient getting too much anesthesia so I told the anesthetist to get the patient thoroughly under but as soon as under for a few minutes, stop the anesthetic and not give any more without saying something about it. I worked for over two hours and when finished, to my amazement found the patient had received no anesthetic after the first few minutes.

Remembering then the case of the man whose chin I had incised I realized there was something about ether—that the pain sense is diminished in a patient given ether for a long time after he is practically awake. After trying it out a number of times, I found that it worked very well in prolonged operations, the patient being deeply anesthetized, the anesthetic stopped after 45 minutes or one hour, and the operation continued for an hour or longer thereafter without difficulty.

I would like to show a slide.

	Prep.	Op. +An.	Op. -An.	
1.	21 min.	14 min.	58 min.	35/ 93
2.	15 min.	60 min.	60 min.	75/125
3.	15 min.	60 min.	95 min.	75/170

These are figures for three cases. The first column shows time of induction; second column shows the time during which the patient was op-

erated on and during which the anesthetic was administered; the third column shows the time operated on without any anesthesia at all, after anesthetic was stopped; the last shows actual anesthesia time compared to total induction and operative time. The first case had 35 minutes of anesthetic against 93; the next had 75 against 125; and the next 75 against 170. The first case was a radical breast case.

The second case was a case of large ventral incisional hernia. After I got the peritoneum closed and the anesthetic had been stopped for about ten minutes the patient got to struggling and I thought the anesthetic would have to be resumed. The anesthetist, however, noticed that she had an air way in the patient's throat. The air way was removed and the operation was finished without difficulty.

The third case was a difficult prolonged hysterectomy for fibroid. This patient had been given fifteen minutes induction, sixty minutes anesthesia and ninety-five minutes of further operation without any anesthetic. As I inserted my last suture in the skin the patient said "That hurts." That shows to what extent the patient had recovered.

The point is this. There is something about ether that makes it different from any other anesthetic. You cannot use any other anesthetic that I know of and work an hour or an hour and a half after stopping the anesthetic, like with ether.

Another point about this last patient is when I left the operating room and went down to see her on the way out, she was wide awake, and the patients are not immediately wide awake if given ether continuously throughout operation; not awake until two or three hours later.

Dr. E. L. King (New Orleans): Obstetrical anesthesia has been of great interest to me for a long time. I have found nitrous oxide is fairly satisfactory, as brought out, but it has its disadvantages in not being able to be given except with a considerable per cent of oxygen and without preliminary analgesia it does not give sufficient anesthesia or analgesia. In my own experience we did not get as much relief on the part of the patient with nitrous oxide as in the past few years with ethylene. That, to me, is the most satisfactory anesthetic in general or obstetrical patients. The high degree of oxygen permitted in ethylene is beneficial to the mother and to the baby and we must not forget that the baby is even more important than the mother as to high oxygen content. I want to emphasize a point stressed already—that for internal podalic version you must have full relaxation and ether is about the only thing that will give relaxation safely and properly. As we all know, years ago chloroform as we used it was particularly valuable for version and I remember Dr. Lewis telling us many years ago that in his days of active obstetrical practice when he was called to do a version he always insisted that

the patient be sound asleep and then sat twiddling his thumbs for three minutes more after she was anesthetized. Version takes ten or fifteen minutes. Chloroform for that time does not seem to have any deleterious effects at the time or later. Most of us prefer ether, feeling it is safer for the patient. Ethylene, as brought out, will not give relaxation and neither will oxide-oxygen or spinal. Give ether and when the patient is well asleep, as Dr. Lewis said, wait five or ten minutes after relaxation is supposed to be complete, before doing the version. Once in a while we find in contemplated version, a contraction ring. In contraction ring use ether and adrenalin to relax the ring. I had such an experience a week ago. I used plenty of ether and adrenalin and got sufficient relaxation to deliver the baby safely.

For forceps delivery some of us have used sacral block which has slight danger and we have had difficulty with that. Most of us do not like spinal anesthesia in obstetrics. I prefer a general anesthetic, given by an anesthetist. A good many do use spinal here and elsewhere. I would rather have my cases handled by an expert anesthetist, giving a general anesthetic. If spinal is used an expert should be present.

Anesthesia is a field of its own; it is a medical field, requiring expert medical men, well trained in medicine and well trained in anesthesia. It is not a mechanic's job. It is not a question of somebody knowing something of anesthesia, knowing how to hold the cone and manipulate the valves; the main part is he should be a good doctor and a good anesthetist.

Dr. Ansel Caine (New Orleans): I wish to say a few words regarding complications following spinals in respiratory trouble and following other anesthesia. If you give a spinal anesthetic high enough to produce good anesthesia for laparotomy, necessarily you catch the diaphragm to some extent and if it lasts over any length of time the lungs are not thoroughly expanded during anesthesia. Just the opposite is true with ether. Expiration is deep with ether. With spinal anesthesia, respiration is fairly shallow and the terminal aveoli is not thoroughly ventilated during the job unless the anesthetist puts the mask on the patient and presses on the bag and inflates the lung. Occasionally throughout the operation when giving oxygen and nothing to put to sleep, hold the mask over the face and inflate the lung; however the oxygen will be absorbed quite rapidly. At the end of operation it is quite the thing to do, to use the same procedure, using air instead of oxygen which is absorbed slower than oxygen. Oxygen requires about 15 minutes to be absorbed while nitrogen requires something like 18 hours to be absorbed. Also when the patient gets back to bed this same procedure should be practiced occasionally until the patient is completely out from under the anesthesia or analgesia or block,

because if it is possible to continue operation and complete operation without pain the same condition is maintained after the patient gets back to bed. I think that accounts for the high percentage of pulmonary complications because you and I know that spinal anesthesia does not irritate the lung and there is bound to be reason for these complications following and I think the reason is lack of ventilation. Practically after all operations deep breathing should be encouraged by the attending nurse who is instructed to see that the patient breathes deeply and fully ventilates. That is a lot of the trouble I feel certain.

Now I want to say a word or two about heart trouble. I believe that spinal analgesia, in the presence of coronary, is rather bad because if you have a narrowed coronary vessel and the patient is getting along pretty well with 180 or 170 blood pressure and you bring the blood pressure down to say 100 or 110, that is way below what the patient is getting along with. I recall a case in which I was told that such a thing took place and that was the opinion of the anesthetist.

In the presence of myocardial disease spasm is disastrous. I know of a case that one of us had in which it was thought that was the trouble; the death was due to spasm and strain on an extremely bad heart. It was a case coming to cardiolytic.

There was another case I had of a man in his late seventies—there was a good spasm while I was attempting to insert the tube to prevent a spasm. I anticipated this and while getting ready to insert the tube got the spasm and when relieved this man went out. He might have died anyway. He had aneurysm, had a big clot, and when it was cut it looked like fibroid. However, after all is said on the subject, he died of an excessive strain on his heart due to spasm.

Dr. Edgar Hull (New Orleans): I should like to make a few brief remarks and ask one question. I would like to add to cardiac conditions mentioned by Dr. Wirth which make poor risks for anesthesia and surgery: first, patients with big hearts no matter what the cause of cardiac enlargement is; and second, the congenital cardiac with cyanosis.

I would also like to mention the fact that most men of experience think cyclopropane is contraindicated in operations on toxic thyroids.

I understand that some of the anesthetists in the city are using a mixture of ethylene and cyclopropane in routine anesthetics because they believe the incidence of arrhythmias thereby is diminished. I would like to have Dr. Adriani's opinion about the use of such a mixture.

Dr. C. W. Mattingly (New Orleans): About spinal analgesia in upper respiratory infection, I think it is a common custom for most surgeons to use spinal with acute upper respiratory infection before operations, especially emergencies. I do not ever think of using spinal without use of carbon dioxide oxygen inhalations for several days

afterward with subdiaphragmatic surgery and expect some paralysis of the respiratory muscles with spinal and general. I am satisfied we have less respiratory infections postoperatively with spinal than with inhalation anesthetics.

Dr. John Adriani (New Orleans): Dr. Rives asked which is the best type of anesthesia for patients who have disease of the respiratory tract. Perhaps I did not emphasize that the gases are best if inhalation anesthesia is used. These are less irritating and produce less secretions than the ethers and other volatile liquids. There is no concrete evidence that ether predisposes to or enhances existing respiratory infection. The incidence of postoperative pulmonary complications is dependent upon many factors such as age, complicating systemic diseases, technic of administration of the anesthetic, duration and depth of anesthesia, type of operation, operating time and skill of the anesthetist. Ether may be preferred to cyclopropane in thoracic surgery because of the cardiac effects of the latter. The fact that ether allows more oxygenation than cyclopropane, since the concentration required for anesthesia is so low, is not a good reason for using ether.

Cyclopropane can be given with a concentration as high as 70 per cent oxygen. The difference between this and that allowed by ether is about 20 per cent and of no practical clinical significance.

The mixing of ethylene and cyclopropane does not abolish the cardiac effects of cyclopropane. This practice is used by some for thyroidectomy supposedly to minimize the amount of cyclopropane. I have seen one death thought to be a cardiac death with cyclopropane in a patient with thyrotoxicosis. I do not feel that mixing the two gases minimizes any attendant danger of this drug.

Dr. Willard R. Wirth (New Orleans): I have nothing further to add to the discussion except that I accept Dr. Hull's addition as worth while and agree with him entirely that a very large heart or the presence of cyanosis in congenital heart disease, furnish serious risks in surgery.

Dr. Merrill C. Beck (New Orleans): I think it is impossible to answer Dr. Rives' question in any dogmatic terms as to which is the best anesthetic under certain conditions. All we can do is take large groups of statistics and if done on a large number of people, figure which is best and the percentage of postoperative complications. It is the consensus that ether in upper respiratory infection is more irritating and should not be used and that we should instead use spinal anesthesia or gases. I think the increased incidence of postoperative complications which occur in the patients with upper respiratory infections who had spinal anesthesia, are due to the phenomenon Dr. Caine spoke about; insufficient ventilation of the aveoli,

causing stasis. As you know, any stagnation or stasis increases the susceptibility of that area to infection. We do not know any group of cases where these patients hyperventilated, probably oxygen, carbon dioxide or air.

Another consideration is to take the individual anesthetist's ability. Just as some surgeons can be dogmatic about one type of incision instead of another; in performing an appendectomy some use McBurney's incision and others find this difficult and use right rectus incision, with good results. If an anesthetist finds he gives one anesthetic better he should use the agent with which he is most familiar.

Dr. Danna spoke of the phenomenon of ether. I do not think it is difficult to explain that. Ether is different from other agents in one outstanding way. It has very slow action. During induction there is a period of analgesia and the patient has his senses, can talk to you and respond to what you say and still has no pain sensation. When ether is given from 30 to 60 minutes a large amount of this is absorbed in the fluids of the body and into the fats. Just because the ether mask is taken away does not mean the patient is not having an anesthetic. With induction the anesthetic is taken into the lungs and blood stream and gradually infiltrated into the fluids and the fats. The depth of anesthesia depends on the concentration in the blood stream, not in the mask on the face. When the mask is taken away the ether is lost through the lungs out of the blood. At the same time it is taken up from the fluids and the fats so that it is possible for a period of analgesia to last an extremely long time with ether. It is not possible for this to happen with other agents used because they are eliminated so fast.

There was a lot of discussion and talk on what spinal did and how bad it was. Spinal, in obstetrics, I do not think is bad. It works well at times if given quite low. These phenomena of markedly depressed circulation and other defects, occur with relatively high spinals. It should be kept low. The degree of circulatory and respiratory trouble is in relation to height.

Most of us like cyclopropane in toxic thyroid cases because, as you know, the metabolism is high; there is a large amount of oxygen used and it is not possible to maintain good anesthesia with other gases because you can not get enough oxygen.

I was disappointed in Dr. Adriani's difficulty with fibrillation. Our group has given cyclopropane as a choice in most cases and to my recollection we have seen none die from ventricular fibrillation. In a patient with heart disease, as stated, the main thing is to keep a large supply of oxygen. We think we can do this with cyclopropane as well, if not better than with other agents.

THE MODERN MANAGEMENT OF FOOD ALLERGY*

MORRIS SHUSHAN, M. D.
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Centuries ago Hippocrates undoubtedly recognized individual food disagreements. Food allergy, however, first became a part of medical literature in 1914 with the report of Laroche, Richet, and Saint Girons.¹ During the past 15 years methods for the study of food allergy have been evolved. We must now realize how many deeply rooted ideas must be altered in order to accept and utilize this concept. Functional or nervous dyspepsia should no longer be diagnosed without first excluding food allergy. Patients who give a history of specific food disagreements are nearly always correct in this belief. Alvarez² does not exaggerate when he states that the "gastro-enterologist who neglects this new field of food allergy is daily sending away, unhelped, patients whom he might be relieving in a spectacular way."

Food allergy is not a rare condition and can be found in many patients with gastrointestinal complaints. Although as you know, statistics may be found to prove any statement, there are three reports which reveal unbelievably high incidence of this condition. Hinshaw and Alvarez³ found that of 500 patients with dyspepsia almost all had to avoid one or more foods; 29 per cent were made severely ill by eating foods. Vaughan⁴ studied 500 villagers in Virginia and found 60 per cent to be food sensitive. Rowe⁵ found 31 per cent to be allergic to foods among 400 university students and nurses. These figures of course include "minor allergy" in which comparatively little trouble is caused by one or two articles of diet as well as "major allergy" in which many severe symptoms result from food sensitivity. Any portion of the gastrointestinal tract may be affected by the allergic reaction. There are no characteristic symptoms, although dyspepsia

and the syndrome of the irritable colon are the most frequent.

The recognition of the foods causing the trouble is not always a difficult matter and may not require time consuming procedures. Cardon⁶ points out that milk allergy is very frequent and may be recognized at the bedside. Patients with minor allergic symptoms are also no problem. Each case of food allergy must be individualized, and may require time, perseverance, and all the methods to be outlined before relief is finally obtained.

HISTORY

A thorough history is essential for diagnosis. Careful note should be made of food disagreements, dislikes, and aversions. At times patients are found to be sensitive to foods they dislike. This information is especially important, however, in planning a diet which the patient will take and enjoy. A list of foods submitted to patients will often serve to refresh their memories. This part of the history will frequently differentiate the patient with allergy from one with gallbladder or nervous dyspepsia. The allergic patient gives a history of partial milk allergy, or may have found that raw foods disagree while cooked foods may be taken with impunity. The foods they report as causing trouble are the ones most frequently responsible for allergy. Gastrointestinal allergy is often present without any other allergic manifestation and in the absence of a positive family history.

SKIN TESTING

Skin testing to recognize the offending foods is considered to have only a 50 per cent accuracy. Rowe⁷ feels that the tests are so misleading as to render them superfluous. In my experience skin tests with the best of the presently available food extracts justifies their use, even though the reactions obtained are not as reliable as in the case of the inhalant antigens. Scratch testing in these cases is usually negative. Positive food tests should be sought for by the more sensitive intradermal method of testing. Positive reacting foods are avoided whenever possible in selecting the initial diet. In this way the chances of producing

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relief with the initial diet are greater. The skin tests also serve to demonstrate to the patients their allergy in a graphic way and what may happen in their gastrointestinal tracts. This aids in securing the satisfactory cooperation of the patient.

The leukopenic index was proposed by Vaughan⁸ several years ago to assist in the recognition of food allergy. The test is performed by making two leukocyte counts in the fasting state of 30 minute intervals. One hour after the completion of a breakfast of the food to be tested, a third count is made, and a final fourth count is made 30 minutes later. If either of the two counts falls 1000 or more below the fasting mean the index is positive and the patient allergic to the food tested. Vaughan found the leukopenic index to be more reliable than skin tests. This test, although it is an interesting phenomenon, is of little practical aid. The blood counts are time consuming and must be performed with the utmost care. Only one food a day may be tested. This procedure, furthermore, does not do away with the necessity for direct trial with the offending foods. The validity of the work upon which the test is based has not been uniformly accepted.

Food diaries may be kept by the patient to record all foods taken and their possible relationship to symptoms. This type of record is of no value in the patient whose meals are prepared away from home. It is impossible to control such a diet and exclude common offending foods. Food diaries can only be used when the symptoms are intermittent and do not occur daily. The analysis of such a report is not an easy matter, and requires experience. Their interpretation should take into account the inaccuracy of patients' records. Furthermore, symptoms which occur may be related to events not associated with the food intake. The analysis of these diaries is always time consuming and often unproductive. I have, therefore, used the food diary in conjunction with the elimination diet as another check on the cooperation of the patient during the period of diet trial.

DIET TRIAL

Numerous methods of diet trial have been evolved. With simple problems complicated methods are unnecessary. Minor adjustments in the diet frequently suffice. Where the degree of sensitivity is an unknown factor some type of diet trial becomes necessary. All methods begin with a greatly restricted diet until all symptoms are relieved and then one food is added at a time.

Very radical restriction is prescribed by Andresen.⁹ He employs two test diets; the first consisting of five common foods—milk, wheat, egg, potato, and orange. This diet is used when symptoms occur occasionally. The second diet consists of rice, gelatin, rye, peas, and raspberries. When symptoms are relieved a new food is added daily. This system possesses the fault of using an extremely fixed, limited initial diet. The second diet is to be used when symptoms occur frequently, and certainly would not recommend itself to the gourmet. Furthermore, reaction to a food may take place several days after it is eaten, so the daily addition of a new food is unsafe.

When symptoms occur frequently Alvarez¹⁰ employs a somewhat similar fixed elimination diet (table 1). If the patient is not relieved, successive diet changes are made. If the symptoms persist after these four diets are tried, the patient is considered to be probably not allergic to foods.

Rowe deserves much of the credit for the advances in this field. The elimination diet as developed by him has proved useful because each diet is balanced, satisfying, and possesses sufficient variety. One may select as the initial diet the best suited for the patient, taking into account the history as well as the positive scratch tests. Ten diets are used by Rowe⁷ at the present time (table 2). These are essentially practical and furnish many suggestions for menus. The principal objection to these diets is the impossibility of obtaining locally such unusual foods as soy bean oil, sesame oil, and flours prepared from rice, potato, lima bean, and soy bean. Many patients object to baking special breads unless they are

found to be wheat sensitive and must adopt rice or other cereal substitutes as a permanent measure.

Dale and Thornburg¹¹ have proposed as modifications of the Rowe diets two diets which contain 21 and 23 hypo-allergic articles. Their objection to the Rowe diets is their low calcium and sub-optimal vitamin content. This objection, however, can easily be met by trying milk early in the process of food addition.

The technic of diet trial which I employ most frequently is another modification of these several systems. An elimination diet is selected and made up for each patient individually. An attempt is made to start with about 20 items selected from a list of hypo-allergic foods (table 3). The foods chosen represent those to which the patient gives no history of disagreement, dislike, or aversion, and to which no strongly positive skin tests have been obtained. In some instances the diet is selected without performing skin tests. As far as possible Vaughan's botanical classification⁸ of closely related foods is followed where cross reactions have been shown to occur. Thus, if there is a history of intolerance to cabbage, the entire cabbage family — brussel sprouts, cauliflower, and broccoli are avoided.

This individualization also enables us to use judgment in ordering the baking of special breads and foods difficult to obtain during this test period. Patients are instructed to eat liberally of the test foods and to keep a food diary recording all foods taken. If relief does not follow this diet the information obtained may point to unsuspected food sensitivities. If necessary, the initial elimination diet is adjusted for another trial period. The diet which brings relief is always followed at least seven to 14 days to obtain maximal relief before other foods are added. Since the initial diets are not fully balanced and are especially low in calcium, I add some form of milk first instead of trying this last as Rowe recommends. If necessary, dicalcium phosphate and one of the polyvitamin preparations available are utilized. I have never

had any marked weight loss or evidence of avitaminosis on this plan. After relief is obtained and results assured a new hypo-allergic food is added every four days. After the initial period the keeping of a formal food diary is omitted. A careful record is kept of dates of food disagreements and resultant symptoms. After several months the foods which the patient suspected of causing trouble are tried.

The problem of evaluating the role of allergy in gastrointestinal syndromes is complicated by many factors. The degree of allergy is often not constant or continuous but may tend to recur in cycles. This gives rise to occasional or periodic trouble and patients will state that certain foods disagree at times. This type of cyclic food allergy probably exists in chronic ulcerative colitis. The allergic reaction is also conditioned by such non-specific excitants as the state of the psyche, menstruation, infection, or seasonal influences. Duke¹² has also noted the non-specific irritating effects of rough foods in patients with chronic food allergy. The existence of psychoneurosis will very often serve to act as the trigger mechanism whereby allergic reactions are initiated. This can be demonstrated by watching the long range behavior of highly sensitive individuals in relation to their environment and biography.

TREATMENT

In treating food allergy the extreme variations in the degree of food sensitivity should be appreciated. Thus, rare cases are so milk sensitive as not to be able to take butter. Usually, however, patients are sensitive to food in a less dramatic way. Foods may have to be taken repeatedly before symptoms occur. The cooking of foods affects their allergenicity. This fundamental fact many patients have already discovered. It is particularly common in fruit or milk allergy.

Food allergy with gastrointestinal manifestations exists frequently with additional complicating organic or functional pathology. Thomas and Wofford¹³ found organic gastrointestinal disease associated with 44 per cent of their cases. I formerly believed

that food allergy was rare in peptic ulcer but now, except for the non-cooperative patient, rate it the most important factor responsible for failure of the medical plan of treatment in this disease. Food allergy co-exists with chronic cholecystitis or cholelithiasis, or may produce a syndrome which mimics biliary colic as reported by Alvarez.² Recent studies in chronic ulcerative colitis point to the important accessory role allergy may play. Andresen⁹ in 33 of 50 cases, or in 66 per cent, demonstrated the presence of food allergy. Mac-
kie¹⁴ found suggestive clinical evidence of allergy in 28 of 36 patients or in 77 per cent. However, excluding cases with flare-ups from excessive doses of vaccine or respiratory infection 11 of the 36 patients were thought to be allergic to foods.

This discussion would be incomplete without mentioning the role of psychoneurosis as related to food allergy. Both conditions are common and often exist by chance in the same patient. When an anxiety syndrome is well developed one usually finds that the patient is inclined to exaggerate food disagreements. Finally, one may become convinced that some are 99 per cent neurotic and one per cent allergic. Other patients are found to be primarily allergic but because of much psychic trauma caused by unsuccessful therapy their latent psychoneurosis become aggravated.

Treatment of the patient with food allergy consists of elimination and avoidance of the foods to which patients are sensitive. The avoidance of foods over a period of time may result in partial or complete desensitization. Every six to 12 months patients should be encouraged to try foods which had previously disagreed. Desensitization by the oral or hypodermic routes has not proved either practical or successful. Food allergy should never be excluded except by food trial. The methods described do no harm and should be used as a diagnostic tool more frequently than is now the custom.

The principles which have been reviewed

are illustrated by the following brief case reports:

CASE REPORTS

No. 1. Mrs. M., food allergy, chronic cholecystitis, cholelithiasis, normocytic anemia, malnutrition. The patient was a white female of 46 who complained of dyspeptic symptoms and pain in the right upper quadrant for many years. Fifteen years ago the appendix was removed and the gallbladder pronounced normal. There was bloatedness and much belching about an hour after meals with attacks of pain in the right upper abdomen. She suspected many foods of causing trouble and had limited her diet to such an extent that during a period of a little more than a year the weight had gone down from 145 to 93 pounds. The red blood cells numbered 3,570,000 with 10.6 gm. or 73 per cent hemoglobin. Cholecystogram showed a faintly outlined gallbladder shadow with negative shadows and with poor emptying. Treatment for anemia and vitamin therapy were given. An elimination diet was begun and with relief of symptoms additional foods were added. Lemon, grapefruit, corn, milk, chocolate, and cauliflower have been found to disagree. There has been a weight gain of 32 pounds and the anemia is corrected. The dyspeptic symptoms have been greatly relieved but some pain in the right upper quadrant by observation has been related to the existing cholelithiasis. The future will no doubt make clear the need for cholecystectomy. This patient definitely had cholelithiasis but the poor general condition made it advisable to treat other conditions first. Anti-anemic therapy and a high caloric elimination diet disclosed foods to which the patient was sensitive and corrected most of the digestive difficulty.

No. 2. V. C., food allergy complicating peptic ulcer. A young man of 26 presented himself with a story of trouble dating back 11 years. There was epigastric pain after meals, bloatedness, belching, and the taste of foods after eating them. The longest period of relief had only been one month. Without any study he had submitted to an appendectomy and to a second operation to release adhesions without any benefit. Previous study had shown an ulcer but bed rest for one month and a milk diet brought only partial relief, and when foods were added to the diet the usual symptoms returned. One sister suffered from asthma. A definite hyperacidity was present. X-ray showed a deformed duodenal cap. Careful questioning did not reveal any known food disagreements. Intradermal tests showed a strongly positive reaction to milk, and positive reactions to white potato, orange, oyster, beef, crab, fish, and spinach. The ambulatory treatment for ulcer was modified so that an elimination diet was ordered which excluded milk and other common foods. Banana,

pork, eggs, and Irish potatoes have been found to reproduce the original symptoms. The patient has been entirely relieved except on one occasion when a return to cigarette smoking gave rise to slight pain.

No. 3. Mrs. V. T., food allergy, psychoneurosis. A female of 57 with a psychoneurotic background presented herself with a picture of gastrointestinal symptomatology which had been present for 19 years. She had received much previous treatment without obtaining relief and was considered a neurotic. Epigastric pain which at times extended through to the back was her principal complaint, but nearly all other dyspeptic symptoms occurred frequently. There was a marked anxiety syndrome present with fear of many foods, so the diet was extremely limited. Migraine had been present for years but had subsided.

Complete laboratory and x-ray studies failed to reveal anything of clinical significance except for a moderate hyperacidity. The failure of previous modes of therapy to give relief and the absence of a satisfactory diagnosis necessitated the consideration of food allergy. Treatment was started with an elimination diet selected from hypoallergic foods to which the patient gave no previous history of sensitivity or to which there was no positive skin test. The addition of foods to this basic diet has proved the existence of allergy to milk, corn, rice, all citrous fruits, bananas, pineapple, grapes, pear, beets, and cauliflower. Eighteen months have elapsed since this mode of treatment was started and the results have been excellent. The general attitude and personality of the patient have changed so she now supports a ne'er-do-well husband without complaint.

No. 4. Mr. R. R., food allergy, migraine, irritable colon. A white male of 34 presented himself for treatment following six years of continuous gastrointestinal symptoms and headaches. Constipation was frequent with much bloatedness, expulsion of flatus, and at times diarrhea. There was frequent pain of a burning character referred to the right lower quadrant and upper thigh. An appendectomy followed by an operation to release adhesions had not afforded any relief. Unilateral frontal headaches with nasal obstruction occurred about once a week. Much sinus study and treatment had been unproductive. The patient stated that daily symptoms occurred. He had been labeled a marked psychoneurotic.

His mother and aunt suffered from asthma. There was no helpful history of food disagreement. There were a number of one plus reactions to foods by intradermal tests. Blood eosinophilia was absent. In spite of meager support for an allergic basis for this patient's symptoms a modified elimination diet was tried. The results after a period of eighteen months have been perfect. The addition of milk, chocolate, raw apple, corn, sweet potato, tomato, and wheat have repeatedly repro-

duced all symptoms complained of by the patient. Food allergy accounted for nearly all of the pathology; a mild degree of psychoneurosis was also present.

No. 5. Mr. R. H., food allergy, chronic amebiasis. A white male of 59 presented many gastrointestinal complaints which had troubled him for more than 30 years. The symptoms were: pyrosis, bloatedness, water brash, joint pain, itching in the heels and palms, pruritis ani, canker sores, and constipation. He listed 21 different foods which he believed disagreed and he had restricted his diet greatly. Examination revealed a poorly nourished man who proctoscopically presented the picture of mucous colitis. The stool was positive for numerous cysts and trophozoites of *Endameba histolytica*. Skin tests showed positive reactions which agreed well with the clinical history. The amebiasis was first treated. Following this he was given an elimination diet based on the history and the positive skin tests. All symptoms have been relieved and there has been a gain in weight of nine pounds. He now takes a well balanced diet including many foods to which he formerly considered himself sensitive.

TABLE 1.
ALVAREZ ELIMINATION DIETS

First Diet	Second Diet	Third Diet	Fourth Diet
Lamb	Lamb	Lamb	Beef or chicken
Rice	Rice	Rice	Corn
Potato			
Butter	Butter	Butter	Butter
Sugar	Sugar	Sugar	Sugar
Lemon	Lemon	Lemon	Lemon
Canned pear	Canned pear		
Jello	Jello	Jello	Jello

TABLE 2.
ROWE ELIMINATION DIETS 1949

- Elimination Diet 1.
- Elimination Diet 2.
- Elimination Diet 3.
- Elimination Diet 4. (milk and tapioca)
- Cereal Free Elimination Diets 1, 2, and 3.
- Fruit Free, Cereal Free Elimination Diets 1, 2, and 3.
- Fruit Free Elimination Diets 1 and 2.
- Elimination Diets for Infants and Children.
- Weight Reduction Elimination Diets.
- Diabetic Elimination Diets.

TABLE 3.
HYPO-ALLERGIC FOODS

- Cereals..... Corn,* rice, tapioca.
- Fruits..... Apricot, date, grapefruit, lemon, peach, pear, pineapple, prunes, raisin, raspberry.
- Vegetables..... Artichoke, asparagus, beets, carrot, celery, eggplant, endive, green pepper, lettuce, lima beans, mustard greens, okra, peas, spinach, string beans, tomato,* turnip, white potato.*
- Meats..... Bacon, beef, chicken, lamb.
- Miscellaneous..... Cornstarch, gelatin, Karo syrup, lemon extract, mazola, maple syrup, molasses, pecans, Royal baking powder, salt, sugar, vanilla.

*Used with caution.

SUMMARY

1. Food allergy occurs more frequently in gastrointestinal disease than is at present realized.

2. The methods utilized must be individualized for each clinical problem.

3. Practical suggestions for utilizing the elimination diet are presented.

4. Treatment of these cases consists of the recognition and avoidance of the offending foods.

5. Food allergy is frequently associated with other functional or organic gastrointestinal tract pathology.

6. Five illustrative cases have been reported.

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DISCUSSION

Dr. A. A. Herold (Shreveport): Dr. Shushan has covered the subject in his usual masterly way as far as time would allow; furthermore, I would like to commend his conservatism. However, I am reminded of an article I read several years ago entitled "Diet from Infancy to Old Age", in which the author went into detail as to the requirements of infants, growing children and adolescents and then concluded: "And here we stop, for, if a person does not learn, after 20, what is best and agrees with him most, it is no use to tell him as he will not follow the directions given." This is true, to a

certain extent, as many people who formerly got "hives" or "nettle rash" from strawberries and certain other foodstuffs now avoid them for another reason; they have learned that it is not idiosyncrasy or intolerance, but that they are allergic to them.

I want to stress one factor, brought out by Dr. Shushan, that is, the possibility and probability of concomitant organic lesions, which should not be overlooked on account of being too allergy conscious.

Then, there are other pitfalls, such as giving anti-allergic therapy credit for cure in those who are just beginning to show manifestations, whereas the symptoms may have been fleeting ones, relieved by the therapy, but precursors of something more serious.

Let me repeat that I am glad to note Dr. Shushan's conservatism and his more or less strict adherence to principles as laid down by Vaughan and Rowe, both of whom I have heard in discussions, and who are probably the leaders in thought in this field today. They place more reliance on test diets than in test proteins for their diagnoses of gastrointestinal allergy.

The first principle of treatment, in this as in other conditions, is, of course, to remove the cause and in order to do so we should follow such rules as laid down by the essayist; just like you remove a car from the body of one who gets crushed under it, but, then we must be ever on the alert to avoid the removed cause.

CLINICO-PATHOLOGIC CONFERENCES IN NON-TEACHING PRIVATE HOSPITALS*

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Surely an explanation, if indeed not an apology, is needed before so unorthodox a communication as this one is presented here. It should be stated at once that no results of laboratory research or clinical investigation are herein reported; but simply the development of a hospital staff activity, from one that was most vexing in its presentation, to one that can be said to be, while far from perfect, at least satisfactory. Since a monthly clinico-pathologic conference is required in all class A hos-

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†From the Department of Pathology, Hotel Dieu, New Orleans.

pitals, and since the difficulties which formerly surrounded the presentation of this feature at Hotel Dieu may be at present disturbing those responsible for this activity in other non-teaching hospitals, it was thought that a report of our experience might be of interest.

The ideal clinico-pathologic conference is most nearly approached in large teaching or public hospitals, where refrigeration facilities and other opportunities for keeping the bodies of cases selected, permit the performance of the actual autopsy at the time of the conference. Under these conditions, the conferences are held at scheduled times, the clinical history and laboratory findings are reviewed, analyzed and discussed in detail, a complete differential diagnosis is made; and then, with the clinical aspect of the case fresh in mind, the pathology is exposed. But it is this presentation of the pathologic material in a simple and interesting manner which has caused the greatest difficulty in holding conferences in non-teaching private hospitals of relatively small size, and it is with this which we are primarily concerned at present.

When clinico-pathologic conferences were first inaugurated at Hotel Dieu about 10 years ago, the ideal procedure outlined above could not be attempted because: first, there was a lack of sufficient autopsy material; second, refusal by the family to allow a body to be kept for even the short time during which a group might be gotten together to hold a conference; and third, the lack of refrigeration facilities, in which bodies might be kept until the scheduled conference time. In short, our difficulties concerned the proper presentation of the pathologic material, and were those which are encountered in any private non-teaching hospital under the same circumstances. So, at that time, the use of Kaiserling-fixed material was employed. The clinical aspect of the case was presented by the physician in charge, and the Kaiserling-fixed tissue, placed in pans, was passed about the audience during the pathologic part of the discussion. Important specimens were then

mounted permanently in glass jars and became part of the hospital's museum. The distortion and loss of color, so frequently characteristic of even the best Kaiserling specimens, and the general inconvenience of handling this material, made us look about for some other procedure.

Next an opaque and a microscopic slide projector were obtained. Fresh organs, frozen in the freezing compartment in an electric refrigerator keep indefinitely, and when thawed, lose very little of their original appearance. At the conference, therefore, the clinical aspects were presented as before and the thawed gross specimens projected on the screen with the opaque projector. Microscopic slides of the lesions were then presented with the microscopic projector. This was an obvious improvement, but was far from perfect. The moist gross specimens were awkward to handle and often unpleasantly odoriferous. The slide projector, using carbon-arc illumination, was usually temperamental.

In the fall of 1937, having seen some Kodachrome transparencies of gross and microscopic pathologic material, it was realized that this was probably the answer to our difficulties in presenting the pathologic aspects of our conferences. Since then, any case that presents interesting features from the standpoint of a conference, is photographed as completely as possible in all of its pertinent phases. Color transparencies, on 2 x 2 inch lantern slides, might be made of the patient's appearance, temperature charts, electrocardiograms, and x-rays, as well as of gross and microscopic pathologic specimens, obtained either from the operating or autopsy room, or both. (All of these slides are not made on every case — only those which are pertinent).

The clinical and laboratory findings are abstracted in some detail and mimeographed copies of this data are made and distributed among those present at the meeting. A member of the staff, who has no previous knowledge of the case is asked to lead the discussion, and, some days before the conference, is given a copy of these

clinical findings. He is, therefore, prepared to analyze the clinical side of the case in detail and make a complete differential diagnosis. Any lantern slides that may pertain to the clinical or roentgenologic aspects are exhibited at this time. The case is then thrown open to general discussion, during which the attending physician may, if he can, elucidate the subject further. After the diagnostic possibilities have been exhausted, and a probable conclusion reached, the pathologic transparencies, gross and microscopic, either from the operating or autopsy room, are shown. The pathologic findings are then described and discussed in detail, always attempting to correlate the pathologic with the clinical phenomena. With all of these facts before it, the conference then closes with a general discussion of the entire case, including the therapy. Attention is called to the fact that the flexibility of photographic methods allows for the presentation of slides of clinical material at these conferences as well as the slides of the pathologic material.

LANTERN SLIDES

The preparation of these lantern slides is the responsibility of the pathologic department. While it is not necessary that this department take over this work, it is absolutely necessary that some one individual control it alone. Otherwise many different cases will be proposed by various interested persons, numerous exposures of unrelated and unimportant material will be made, much film will be wasted, and great confusion will result. At Hotel Dieu, the photographic equipment is the property of the hospital, but is under absolute control of the Department of Pathology, who, although attempting to cooperate to the fullest with the members of the staff, finally selects the cases to be photographed and presented.

The outlay for the photographic equipment represents an investment of less than \$300. It consists of a Leica camera, model E, No. 50055 with a *f* 3.5 lens, that takes a 35 mm. picture. Used with this camera is a ground glass focusing attachment, various extension tubes for close-up work and

a photomicrographic attachment. These accessories are made by Leica for use with this particular camera. Various other apparatus, such as a copying stand, photo-flood lamps, a camera tripod, a Weston photometer, and a microscopic lamp with a water-flask condenser and 3200 Kelvin bulb have also been found quite necessary. Kodachrome type "A" film has been found most satisfactory for this work, and is even used, with a Kodachrome type "A" filter, for taking x-ray plates, for it has been found to bring out more detail than ordinary "black-and-white" film. The slides are presented with an Eastman Kodaslide projector having a 28 foot focal length for a 6 foot screen.

While this seems to be an elaborate and expensive outlay, it should be remembered that the initial investment, with ordinary care, is practically the last. The actual transparencies themselves, mounted and ready for use, cost less than 20 cents, and for each case we rarely use more than 10 slides and usually four to six. Remembering that these slides become part of the hospital's pathologic museum and comparing their cost with that of mounting and preserving Kaiserling specimens, the economy of this method is at once realized, to say nothing of its other advantages.

However, the most necessary part of the set-up is a member of the hospital staff interested enough in photography to be able to turn out creditable work. At Hotel Dieu, we have been fortunate in having one of our laboratory technicians with this qualification, and no doubt such a person can be found in some one department of every hospital. The technic is not too difficult and can be perfected by almost any one who is interested enough in photography.

Besides the use of these transparencies in the clinico-pathologic conferences as previously outlined, other uses have suggested themselves as time passed. As indicated before, when properly filed and cataloged, they have filled the role of a hospital museum very much more cheaply than the usual fixed gross specimens, and in many ways better. They take up less room, they

keep better, they are more easily transported and the microscopic sections can be projected along with the gross. From this store of readily available material, illustrations from cases of a similar or contrasting type may be used along with those of the case under discussion at a conference. Or a member of the staff may use these slides to help illustrate a lecture or essay of his own. Recently, slides of interesting specimens have been shown at each staff meeting along with a thumbnail clinical history, and have been well received. Finally, they have been valuable as teaching material in the nursing school's pathology course.

DISCUSSION

Dr. Edwin H. Lawson (New Orleans): Dr. Couret has most ably presented some of the difficulties attending the presentation of clinico-pathologic conferences in one class of hospital, that is, the non-teaching, private hospital. He has also presented the solution to some of these difficulties. However, there still remain a few other conflicting factors to such conferences.

Possibly the most difficult factor to overcome is the selection of a time for the conference suitable to the attending staff of the hospital and to the pathologist. It is indeed very discouraging to prepare the material for a conference and have only two or three members of the staff in attendance.

Another factor causing the pathologist's concern is the lack of cooperation of the attending staff in securing material for the conferences. There still remain several physicians who not only decline to assist in obtaining an autopsy on their patients, but even go so far as to discourage the relatives of the deceased from giving permission. As this source is one of the largest for material, such practice certainly places the pathologist in an embarrassing position.

A third factor involved is the obtaining of sufficient and qualified personnel to assist in preparing the material for a conference. To overcome this hazard the laboratory must have the full cooperation of the administration of the hospital.

Dr. Couret has illustrated his presentation with some excellent slides. In fact I have seen none better on exhibit in any meeting. To prepare such slides requires a large amount of time and efficient technic. In fact, it requires the full time of some

person who is accomplished in photography and who will devote sufficient time to the project.

I would like to ask Dr. Couret what he has used in his pictures as a background for the gross specimens, and how the specimens were prepared so that no leakage occurred while they were being photographed.

Dr. William H. Harris (New Orleans): I merely want to state that the difficulties of such conferences are nothing unusual. I think all we have to do is go out to Charity Hospital, where they have a tremendous staff, surgical and medical, and we can appreciate the small percentage of attendance. On the other hand nothing deserves more complete cooperation than clinico-pathologic conferences, and I am sure it is regrettable that we cannot obtain better cooperation. I doubt that there is any solution to the problem except perhaps where staff appointments make certain percentage of attendance obligatory—even this would not be exacted.

Take the detail and effort that Dr. Couret has gone to here. It is a treat to anyone, I am sure. It is amazing to be able to view the pathology under such desirable conditions. I am just back from the meeting of one of our leading national societies of pathology, at which many of our leaders gave papers, and there were no presentations of lantern slides in color that excelled and most were not as good as those which Dr. Couret has presented here today.

Dr. John H. Connell (New Orleans): I would like to add my expression of appreciation and I am sorry that some of you were so late and could not see the photographs as they were run in this section. They were a beautiful bit of photography.

In line with Dr. Couret's paper, I might add that one way we have found to make members attend the clinico-pathologic conference is to have as many of the staff as possible participate.

Dr. John S. Couret (in closing): As regards the attendance, that is something which is in the hands of the gods. At Hotel Dieu, the intern staff, for which these conferences are primarily gotten up, attend pretty well. There are also a few members of the visiting staff who attend regularly. Attendance, of course, depends a great deal upon the type of presentation and the interest which it stimulates, and the amount of time that the staff has to give to it. I do not know that we can improve the latter; but I will say it is my impression that there has been more interest in a conference given in this present form than previously. Of course, there will never be the interest in any presentation as that in which the actual autopsy is performed.

As regards the personnel and the preparation of these slides: You have to have somebody who

is interested enough to study the photographic problems out, and Mr. Carlson, I think has done very creditably. Personally, I am not interested in photography at all, and if left to me there would not have been any of this work done.

In regard to the background, Mr. Carlson has hit on the idea of using the discarded black paper in which x-ray films come. We get everything

ready and put the specimen down on the black paper and take the picture right away. It has worked out nicely. We are planning to get a board and paint it with black or dark brown flat paint and use that. I think that is going to be the best answer for a background. Dark green or dark brown will not clash with any of your specimens, but will furnish a good contrasting background.

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SOUTHERN MEDICAL ASSOCIATION

The annual meeting of the Southern Medical Association was held a few weeks ago in Richmond and was unusually successful. In spite of the difficulties of travel, over two thousand physicians and their wives registered to hear one of the most instructive and interesting programs that this society peculiar to the South has ever given. The scientific papers were on a high plane and their discussion was very general. It will please the members of the Louisiana profession to learn that Dr. Lucien LeDoux was honored by being made

Chairman of the Council and Executive Committee. This, in the organization, is the body that makes possible the smooth running of the Southern Medical and which is the functioning governing body. Those who know Dr. LeDoux can well appreciate why he was selected for this signal honor. A charming gentleman socially, always a man of force, initiative and imagination in his professional activities, he will make an excellent man for the position which his colleagues honored him and themselves by his selection.

While this information is not definite, rumor has it that the Southern Medical Association will not have its annual big meeting next year and will cease to hold these meetings until after the present emergency is over. The thought occurs that a scientific body such as this organization should continue to function despite the difficulties in travel and the pressing need of doctors in their various localities. Science must not be allowed to come to a dead stop in spite of war. The problems arising as result of war should have a free and frank discussion and researches, investigations and studies that are a by-product of war activities should be made known to all the medical profession by meetings such as those held by the Southern Medical Association.

—o—

MENTAL DISORDERS IN THE ARMY

The figures that are put out by the Surgeon General's office relative to the soldiers who are discharged for disability arising as result of mental disorders, are most distressing. Mental diseases seem to be the biggest problem at the present time that the physicians in the Service of Supply have to contend with. There are a large number of these patients with psychiatric disturbances. As evidencing this statement is the fact that there were 8,145 such discharges for mental disease for the year 1942 up until September 1. The next most frequent cause for discharge was tuberculosis with only 1,281 men discharged with this diagnosis. Mental patients in the Army are not only causing trouble in the local commands but when they arrive at the station and

general hospitals it is extremely difficult to get rid of them. They bulk large in the hospital census and in some of the hospitals these patients represent from one-sixth to one-eighth of the total number of patients.

The difficulties in getting rid of the mental cases lies in the fact that provision has to be made for their care after they leave the hospital. They cannot be returned to civil life as the ordinary individual discharged for some one or another cause. If families are unwilling to accept these patients then they must go to state institutions and many of the state institutions are now filled to the brim, in fact some states are refusing to take their citizens who have been inducted into the Army and then have broken down mentally.

The eliminating of a potential mental case by the induction board would be very much facilitated if information of the past history of a man was sent to the induction station. It is obvious a man who has a history of epilepsy, who has been a problem child, who has been up before minor courts, is just the type of person the psychiatrist at the induction station would eliminate did he know about such a man's history. In some states it has been possible to get this information but these are few and far between. It would be a tremendous saving to the Government if the doctors who know these people could give what they know about the past history to the draft boards to be sent with other papers to the induction station.

In the meantime the psychiatric examination at the induction station is working passably well. Unfortunately there is no exact, brief and scientific way of determining a man's mental capacity. The psychiatrist might well follow the leadership of the psychologist in standardizing some form or series of tests which at least would be elucidating, although not as conclusive, for example, as the x-ray examination of a man's chest.

One wonders if these embryo soldiers break down in such numbers before they have even smelled battle smoke, what is going to happen in the armies that are in

actual combat. Will there be a large number of mental breakdowns under combat conditions or will most of these soldiers be eliminated before that time?

—o—

LOCAL SULFONAMIDE THERAPY

The brilliant results that were achieved at Pearl Harbor, where, for the first time, the sulfonamides were used locally in a large series of traumatic cases, has stimulated the profession to such an extent that it is now a common practice to apply one or another of the sulfonamide preparations to wounds and injuries. To study the various preparations in order to find the one which was least irritating and most efficacious, Osgood* performed a series of experiments and investigations by the marrow culture technic. In this study he found that sulfanilamide is the least effective of any of the sulfa group and that sulfathiazole more nearly fulfills the indications for local antiseptics. The author points out that none of the drugs is capable of destroying a large number of organisms when they are present in any local area of infection and that this consideration must be borne in mind in preparing the field for the application of sulfathiazole. He points out further that for prophylaxis injection the drug should be applied as soon as possible after injury in order that the full effect may be obtained before a large number of organisms have grown in and around the necrotic and dead tissue.

In the treatment of local collections of pus it is advisable to obtain by oral or intravenous use of the drug a high blood level. Osgood points out also that sulfathiazole by mouth wipes out the former contraindication to early operation on infected cases because the circulating drug will take care of the organisms that may be disseminated by the blood stream in an operation. The powdered drug may be applied locally after the removal of necrotic tissue and the cleansing of the wound well with saline solution saturated with sulfathiazole. It is quite pos-

*Osgood, E. E.: Principles which should govern the local use of the sulfonamide drugs, *Surg., Gynec., & Obstet.*, 75:21, 1942.

sible to close infected wounds without drainage, as a matter of fact, according to Os-good this is the method of choice. The sulfathiazole powder should be sprinkled or blown on to the wounded surface immediately before coaptation. If a wound is treated in less than an hour the sulfa drug by mouth should not be necessary.

Other local uses of the sulfa drugs include sulfathiazole powder as a dusting powder in epidermophytosis. In impetigo it may be used orally and by local applications. As a matter of fact, any ulcerative lesions, not tuberculous or syphilitic in nature, may be helped by the local application in a dry form or in a suitable jelly medium. Sulfathiazole is being used with most beneficial effects in gonorrheal ophthalmia. It has been used in the treatment of corneal ulcers and other bacterial infections of the eye.

In ear, nose and throat lesions sulfathiazole powder is advocated locally, being blown from a powder blower on the site of operation immediately after the operation is finished. Sulfathiazole may be used locally in acute maxillary sinusitis, in conjunction with oral administration of the drug. It may be used in otitis media, and as a prophylactic after mastoid operation it is recommended that sulfathiazole be given by mouth and that the local wound be irrigated with saline solution saturated with sulfathiazole.

After a tooth is extracted, the resulting cavity should be filled with powder and the gums sewed over it.

The use of sulfaguanidine by mouth in abdominal surgery is well known. Powdered sulfathiazole should be used locally on the operative site during and after the operation. If there is general peritonitis it is suggested that the abdominal cavity be rinsed out with the saline saturated sulfathiazole solution and then 10 to 30 grams of the powder should be sprinkled into the abdominal cavity.

In gynecologic and obstetric conditions sulfathiazole is used locally, as between the cut surfaces in perineorrhaphy and episiotomy wounds. The uterus is irrigated with the solution until the return fluid is clear in the instance of postabortal infections. The powder is then placed in the uterine cavity.

In orthopedic surgery, when there are operations on infected bones, again the involved areas should be filled with powdered sulfathiazole, but the drug of course should be given likewise by mouth.

In view of the new developments in the local application of the sulfa drugs it would seem that in practically every type of operation in which infection exists or which may be potentially present, sulfonamides should be used locally. Local application may be made in powder form, in a lubricating jelly, or by saline infusions for washing out infected areas.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

SOUTHERN BAPTIST HOSPITAL

The regular monthly meeting of the clinical staff of the Baptist Hospital was held in the staff room at 8 o'clock on the evening of November 24. Dr. H. W. E. Walther presented a paper on castration plus stilbestrol in carcinoma of the prostate. The next presentation was the report of an interesting case by Drs. W. H. Gillentine and Gilbert Anderson. Another instructive case was also presented

and reported to the staff by Drs. Hilaire Ogden and E. Z. Browne.

CHARITY HOSPITAL

The regular monthly meeting of the Medical Section of Charity Hospital was held on Tuesday, November 17 at 8 p. m. The program consisted of a report by Dr. B. Pearson on multiple myeloma, and the analysis of an interesting neurologic case by Dr. P. H. Jones.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

During the month of November the Society held one regular scientific meeting. The program was as follows:

1. Rubber Goes Synthetic. Motion Picture and Illustrated Lecture. By Mr. V. W. Nunez, Standard Oil Company of Louisiana.

At a general meeting of the Society held Monday, November 9, 1942, the following nominations for Officers of the Orleans Parish Medical Society and Delegates to the Louisiana State Medical Society, 1943, were handed to the Secretary in accordance with the By-Laws:

President-Elect—Dr. Edwin L. Zander
First Vice-President—Dr. George H. Hauser
Second Vice-President—Dr. Philip H. Jones
Third Vice-President—Dr. Walter Levy
Secretary—Dr. Daniel J. Murphy
Treasurer—Dr. A. V. Friedrichs
Librarian—Dr. Max M. Green

Additional members to the Board of Directors: Dr. Paul G. Lacroix, Dr. E. L. Leckert, and Dr. E. J. Richard.

Delegates to the Louisiana State Medical Society: Dr. Gilbert C. Anderson, Dr. Edgar Burns, Dr. Edmund Connely, Dr. A. V. Friedrichs, Dr. Max M. Green, Dr. George Hauser, Dr. Paul G. Lacroix, *Dr. Spencer B. McNair, Dr. Waldemar R. Metz, Dr. Robert Sharp, Dr. H. Ashton Thomas and Dr. Edwin L. Zander.

*Declined.

NEWS ITEMS

Drs. Val H. Fuchs, Monte Meyer and George Taquino attended the annual meeting of the American Academy of Ophthalmology and Otorhinolaryngology at Chicago, October 11-14.

Major Chester S. Fresh has been made Commanding Officer of the Station Hospital at Grenier Field, Manchester. Major Fresh, who is an Army Air Corps Surgeon, has been on active duty since 1940.

Dr. George McCoy attended the meeting of the District of Columbia Basic Science Board in Washington, October 22.

Dr. Gilbert C. Anderson read a paper on Neurology at a meeting of the Theta Beta, national honorary biology society; Agramonte, premedical society, and Beta Epsilon Upsilon, national honorary technology group, at Loyola University, October 22.

Drs. E. Carroll Faust and Joseph D'Antoni recently lectured on tropical medicine in schools of the East and North under the auspices of the National Research Council.

Dr. E. A. Bertucci recently attended the meeting of the Southern Tuberculosis Conference at Memphis.

Dr. Gilbert C. Anderson was elected president of the medical staff of Charity Hospital at a recent meeting of the staff. Other officers elected were: Dr. Edgar Hull, vice-president; Dr. W. T. Beacham, secretary; and Dr. Gordon Johnson and Adolph Jacobs, members of the Board of Directors.

CALENDAR OF MEETINGS

Tuesday, Dec. 1—Eye, Ear, Nose and Throat Staff, 8 p. m.

Wednesday, Dec. 2—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m. Clinico-pathological Conference, Marine Hospital, 7:30 p. m. Hutchinson Memorial Clinic Staff, 8 p. m. Mercy Hospital Staff, 8 p. m.

Thursday, Dec. 3—Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m. Baptist Hospital, Executive Meeting, 8 p. m.

Monday, Dec. 7—Orleans Parish Medical Society Board of Directors, 8 p. m.

Wednesday, Dec. 9—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m. Touro Infirmary Staff, 8 p. m. Women's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.

Monday, Dec. 14—Scientific Meeting Orleans Parish Medical Society, 8 p. m.

Tuesday, Dec. 15—Charity Hospital Medical Staff, 8 p. m.

Wednesday, Dec. 16—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m. Clinico-pathological Conference, Marine Hospital, 7:30 p. m. Charity Hospital Surgical Staff, 8 p. m. Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.

Thursday, Dec. 17—Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

Friday, Dec. 18—I. C. R. R. Hospital Staff, 12:30 p. m.

Monday, Dec. 21—Hotel Dieu Staff, 8 p. m. Clinico-pathologic Conference, Baptist Hospital, 8 p. m.

Tuesday, Dec. 22—Baptist Hospital Staff, 8 p. m.

Wednesday, Dec. 23—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m. French Hospital Staff, 8 p. m. New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.

Thursday, Dec. 24—Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

Wednesday, Dec. 30—Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.

Thursday, Dec. 31—Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

OFFICE OF WAR INFORMATION, WAR
MANPOWER COMMISSION

"The Directing Board of the Procurement and Assignment Service is pleased to announce that 95 per cent of the 1942 procurement objective of medical officers for the armed forces has already been met. Toward this total a number of States have supplied more than their share of physicians and only a few States are lagging behind in their quotas. It is from these States that the additional physicians needed during the current year should come.

"The recruitment of such a large number of physicians in a few months is a remarkable achievement and another demonstration of the traditional patriotism and unselfishness of the medical profession. In this achievement, and particularly in those of its members who are 'in service,' the profession can justifiably take pride.

"The end, of course, is not yet. Increases in the armed forces will necessitate more medical officers and additional demands will be made upon the profession for medical services in critical war production areas. The Directing Board is convinced, however, that the physicians of this country will respond to future calls for service, whatever they may be, in the same splendid manner with which they have already volunteered for service with the armed forces."

(s) Frank H. Lahey, M. D.,
Harold S. Diehl, M. D.,
Harvey B. Stone, M. D.,
James E. Paullin, M. D.,
C. Willard Camalier, D. D. S.
of the Directing Board.

STATEMENT FROM WAR MANPOWER
COMMISSION

Subject: Alien Physicians

The Army and the Navy are not in a position to accept enemy alien physicians as commissioned officers because of the citizenship law. Also many of these physicians do not meet other requirements such as license to practice, internship, or other professional qualifications.

It, therefore, seems inadvisable to recommend that these aliens go into the Army as privates with the expectation of receiving citizenship at the end of three months, for many may not receive it

for some reason, and they may not be acceptable to the Medical Corps even though they are given citizenship.

Since there are many places in which these men can be of service in civilian life, it is recommended that efforts be made to place those who are not acceptable for service with the Army or the Navy as temporary employees in hospital positions, in critical areas where more physicians are needed, in special positions in medical schools, and in public health agencies. In such positions they may be rated as essential and may thus be used in their professional capacity.

Until definite rulings are made concerning the admission of this group into the military services, these general policies should be followed.

AN OPEN LETTER

"So much has been said and so much implied about the desirability of drafting 18 and 19 year old men for military service from the viewpoint of emotional stability that it seems that in the public interests that a simple, direct statement should be made on this question.

"Speaking as individuals we wish to assure the public and parents of this age group that there are no grounds for apprehension as to the effect of military service on these younger men as distinguished from the older men. Such statistics as are available indicate that the incidence of mental breakdowns is no greater in the 18 and 19 year age group than in the older group. If anything it is somewhat less. It would seem to us that the proposal now before the American Congress does not unduly compromise the future mental integrity of this particular age group or of the nation. With the government realizing and properly assuming this increased responsibility, we endorse favorable action upon the proposal to include men of 18 and 19 years under the Selective Service Act."

Signed: Adolf Meyer, M. D.,
C. Macfie Campbell, M. D.,
Foster Kennedy, M. D.,
C. Charles Burlingame, M. D.,
Edwin G. Zabriskie, M. D.,
Winfred Overholser, M. D.,
S. Bernard Wortis, M. D.,
Tracy Putnam, M. D.,
Oscar Diethelm, M. D.

CIVILIAN DEFENSE—EMERGENCY BASE HOSPITALS

The Medical Division of the U. S. Office of Civilian Defense, through its Regional Medical Officers and State Chiefs of Emergency Medical Service, has now made emergency provision for the establishment of a chain of Emergency Base Hospitals in the interior of all the coastal states. They will be activated only in the event of an enemy attack upon our coast which necessitates the evacuation of coastal hospitals. Each base hospital will be related to the casualty receiving hospital which has been evacuated and it is expected that the staff will be recruited largely from the parent institution.

In order to meet a sudden and unexpected crisis without delay, arrangements have been completed with state authorities for the prompt taking over of appropriate institutions in the interior of the state for this purpose and with local military establishments for the transportation of casualties and other hospitalized persons along appropriate lines of evacuation.

More than 150 hospitals in the coastal cities are in the process of organizing small affiliated units of physicians and surgeons, which will be prepared to staff the Emergency Base Hospitals if they should be needed. These units are composed of the older members of the staff and those with physical disabilities which render them ineligible for military service, and of women physicians. In order that a balanced professional team may be immediately available the doctors comprising units are being commissioned in the inactive Reserve of the U. S. Public Health Service so that, if called to duty, they may receive the rank, pay and allowances equivalent to that of an officer in the armed forces.

Dr. George Baehr, Chief Medical Officer of the U. S. Office of Civilian Defense, states that the members of these affiliated hospital units will continue to remain on an inactive status for the duration of the war, unless a serious enemy attack occurs in their region which necessitates the transfer of casualties to protected sites in the interior. Their commissions may be terminated upon their request six months after the end of the war, or sooner if approved by the Surgeon General. Such approval will be given in the event such officer desires active duty in the Army or Navy.

WAR PRODUCTION BOARD

No person shall sell, transfer or deliver, or purchase or accept any transfer or delivery of, or process or combined with other materials: (1) quinine, except for use as an anti-malarial agent; (2) as an ingredient of quinine and urea hydrochloride for hypodermic use, or (3) an ingredient of quinine hydrochloride and urethane. Totaquine may be used only as an anti-malarial agent. Cinchona bark may be used only for the extraction of quinine or totaquine.

Similar restrictions apply to the purchase, sale and use of cinchonine, cinchonidine and quinidine, the first two except as anti-malarial agents, the last salt only as anti-malarial agent or in the treatment of cardiac disorders.

Totaquine is a new term probably unknown to the majority of United States doctors. It is, however, familiar to those who have lived in the Philippines, India and the Malay States. It is derived from the bark of numerous species of cinchona trees which heretofore have not been used for the production of quinine. It will probably be marketed with a notation as to its quinine content.

SOCIAL SECURITY AMENDMENTS REJECTED

Legislation of vital interest to Radiology was introduced in the U. S. Congress on September 9, by Representative Eliot of Massachusetts, in the form of a proposed amendment to the Social Security Act. Now before the House Ways and Means Committee, the bill proposes that state social security programs be federalized; it provides for increased taxation to give cash benefits to workers who are temporarily unemployed on account of sickness; and it provides for payments ranging between \$3 and \$6 per day to hospitals for hospital care. Radiology is expressly included as a part of the care to be provided by approved institutions, which are defined as "an institution providing at least, bed and board, general nursing care, the use of an operating or of a delivery room, ordinary medications and dressings, laboratory and *x-ray services, and other customary hospital care and services, etc.*"

Immediately the implications of the bill became apparent, Dr. V. W. Archer, Chairman of the Board of Chancellors, conferred with political leaders in Washington, and was assured by ranking members of the House Ways and Means Committee that the proposed amendment would not be considered by Congress during the present session. This advice is substantiated by recent developments on the political front, which indicate that social experiments are out for the duration. As one Washington reporter puts it, "Senator Vandenberg and a majority of Congressmen take the view that the Social Security system now is adequate; that other taxes are stiff enough, without adding to payroll levies. Furthermore, a system of forced savings is being studied, based on the theory that the individual who saves should receive the benefit of the savings." In accordance with this view, Congress froze payroll taxes for old-age insurance at 1% last month.

Organized medicine, and particularly, organized radiology, would be inviting disastrous consequences, however, if it relaxed its vigilance under the assurance that the proposals of social theorists were temporarily blocked. One prominent Washington interpreter warned last week that "Social Security broadening will be pushed next year."

SOUTHERN MEDICAL ASSOCIATION MEETING

At the recent successful meeting of the Southern Medical Association, which was held in Richmond, Virginia, November 10-12, there appeared on the program the following doctors from Louisiana, together with the title of their subjects: M. T. Van Studdiford, New Orleans, who spoke on "Intestinal Parasites and Skin Diseases;" Nathan H. Polmer, New Orleans, whose subject was "Electrodiagnosis in Industrial Practice;" Frank L. Loria, New Orleans, who discussed "Penetrating Gunshot Wounds of the Abdomen;" Lucien A. LeDoux, New Orleans, "Premenstrual Cystitis;" Robert F. Sharp, New Orleans, "Evaluating the Ureteral Splint;" Joseph S. D'Antoni, New Orleans, "Further Observations on Amebic Colitis in the New Orleans Area;" Ernest Carroll Faust, New Orleans, who gave an address entitled "Horizons of American Tropical Medicine;" Chester A. Stewart, New Orleans, "The Use of Cereal Thickened Formulas Instead of Liquid Milk Formulas to Preserve Maternal Nursing;" John S. LaDue, New Orleans, "The Intravenous Use of Cardiac Glucosides;" Grace A. Goldsmith, New Orleans, "The Incidence and Recognition of Riboflavin and Niacin Deficiency in Medical Diseases;" Donovan C. Browne, New Orleans, Chairman's address before the Section on Gastroenterology, entitled "The Patient Following Gastric Surgery;" W. R. Mathews, Shreveport, Chairman's address before the Section on Pathology, entitled "Acute Hematogenous Interstitial Nephritis;" A. Scott Hamilton, Camp Claiborne, "Anatomical and Mechanical Features of Treatment of Fractures of the Humerus;" Maxwell E. Lapham, Washington, D. C., Dean-on-leave, Tulane University School of Medicine, who spoke on "The Civilian Need."

The scientific exhibit of Dr. Grace A. Goldsmith, Assistant Professor of Medicine of Tulane, was one of five exhibits receiving honorable mention.

ANNUAL CONFERENCE OF SECRETARIES AND EDITORS

The Annual Conference of Secretaries and Editors of Constituent State Medical Associations was held in the offices of the American Medical Association November 20-21. The program for the meeting had to do almost entirely with war efforts. The Surgeon Generals of the Navy, Army and the Public Health Services addressed the meeting. Others included Dr. Walter F. Donaldson, Chairman of the War Participation Committee of the American Medical Association; Dr. Fred W. Rankin, President of the American Medical Association; Dr. James E. Paullin, President-Elect of the Association, and others. The Saturday morning program had to do with medical service plans.

MENVILLE TO HEAD CONVENTION

Dr. Leon J. Menville, as president of the Radiologic Society of North America, presided at the

28th annual meeting which was held from November 30 through December 4 in Chicago. Dr. Menville is the first roentgenologist from the South who has been honored by this Society by selection as president. For ten years before his election, Dr. Menville was the editor of "Radiology," one of the outstanding medical publications in the country.

NEWS ITEMS

Dr. C. A. Stewart, Director of the Department of Pediatrics, Louisiana State University, and Dr. Ralph V. Platou, Acting Head of the Department of Pediatrics, Tulane University, attended the annual meeting of the American Academy of Pediatrics in Chicago, November 4.

Dr. Paul T. Talbot attended the Annual Conference of Secretaries and Editors of Constituent State Medical Associations in Chicago, November 20-21.

Dr. John H. Musser is serving on a small committee appointed by the Secretary of War to study the medical care of American soldiers, and to make recommendations concerning the conduct of the Office of the Surgeon General of the United States Army.

The Fifth Annual Forum on Allergy will be held in the Hotel Statler, Cleveland, Ohio, January 9-10.

The next examination of the American Board of Obstetrics and Gynecology will be held Saturday, February 13. For further information address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh, Penna.

Dr. Josiah D. Bancroft, a Tulane graduate, class of 1931, died while in active service in the Army, September 1, 1942. Dr. Bancroft was a captain, and assigned to active duty at Camp Rucker.

UNITED STATES PUBLIC HEALTH SERVICE

Assistant Surgeon Charles W. Fluke and Assistant Surgeon Wardell E. Mills have been assigned to the District Coast Guard office in New Orleans.

Surgeon R. T. Westman has been assigned to the local Health Department of New Orleans. Assistant Surgeon Richard K. Parrish has been called to active duty and ordered to report to the New Orleans Coast Guard District Office. Assistant Surgeon Carl C. Kuehn has been sent from New Orleans out to the Calcasieu-Lake Charles Health Unit at Lake Charles. Assistant Surgeon Richard A. Flebbe has been sent to the Parish Health Unit in Baton Rouge. Assistant Surgeon Andrew P. Sackett has been relieved from duty in New Orleans and sent to Columbia, South Carolina. Assistant Surgeon James A. Finger has been sent to the Coast Guard Station at St. Augustine, Florida.

CHANGE IN POTENCY OF DIGITALIS

The new Pharmacopoeia (U. S. P. XII) has materially reduced the potency of powdered digitalis. Physicians should bear this in mind when ordering the drug. The new potency is 83 per cent of the potency of the old U. S. P. XI. In other words, the standard dose of powdered digitalis, namely 0.1 gram (1½ grains) will require the administration of six pills as contrasted with five pills of the old standards.

INFECTIOUS DISEASES IN LOUISIANA

The Section of Epidemiology of the Louisiana State Board of Health shows that for the week ending October 10 only four diseases were listed in the weekly morbidity report in numbers greater than 10. There were 538 cases of syphilis, 82 of gonorrhea, 18 of tuberculosis, and 10 of malaria. A goodly number of gonorrhea cases originated in army camps, but only nine of the many cases of syphilis came from this area. For the following week which came to an end on October 17, there were listed 311 cases of syphilis, 115 of gonorrhea, 38 of pulmonary tuberculosis, and 14 of diphtheria. The diphtheria cases were rather unusual in their number. They were scattered widespread throughout the state. Two cases of poliomyelitis arose this week, one in Franklin and one in Orleans Parish, and there were four cases of typhus fever recorded from four different parishes. For the next week terminating October 24, it was found that syphilis as is customary leads by far all other reportable diseases, 482 cases having been found in the state in this week, followed by 36 of gonorrhea, 19 of diphtheria, and 11 of pulmonary tuberculosis. The three cases of typhus fever reported were two from Orleans Parish and one from East Baton Rouge Parish. The diphtheria cases, 12 in number, came mostly from Calcasieu Parish. For the week ending October 31, there was a considerable drop in the number of cases of syphilis, the figures falling to 226. Other diseases reported in this week in numbers greater than 10 include 80 of gonorrhea, 15 of pulmonary tuberculosis, and 10 of malaria. The one case of poliomyelitis was found in Franklin Parish. Two cases of typhus fever were reported, one from Orleans and one from Pointe Coupee Parish. For the week which closed November 7, there were reported 343 cases of syphilis, 86 of gonorrhea, 21 of pulmonary tuberculosis, 14 of diphtheria, 13 of chancroid. Again this week poliomyelitis appeared with two cases, one arising in Madison and one in East Carroll Parish.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week which ended October 10 there were 120 deaths reported in New Orleans, as contrasted with the previous week when there were 145 deaths. The deaths were divided 76 white, 44 negro, with 13 of them being

in children under one year of age. There were 23 more deaths in the city in the next week which came to an end October 17, 96 of these being in the white and 47 in the negro race, with only six infant deaths. For the week that ended October 24, there was a decline in the number of people who died in the City of New Orleans, 125 demises being reported, 72 of which were white and 53 colored, nine of the total being infants. For the week which ended the month of October, 90 of the 148 deaths in the city were among the white population and 58 in the negro, with a very marked increase in the number of infant deaths, these going up to 24. When the infant deaths are small in number, as in the week which ended November 7 when only nine infants died, the death rate falls considerably. Thus, in this week there were 129 of the citizens of the city succumbing to disease or accident, 82 of them being white people and 47 negroes.

DR. JOHN F. MOUTON

1868-1942

Dr. John Franklin Mouton, Lafayette, was born in Lafayette, Louisiana, on June 11, 1868. His preliminary education was received in private schools of Lafayette, with academic degrees of A. B., A. M., LL.D. received from Jesuits College of Grand Coteau. He graduated in medicine from the College of Physicians and Surgeons, University of Maryland, Baltimore, in 1889. He has been a member of the State Medical Society for a long number of years. He died on September 3, 1942.

DR. JOHN K. GRIFFITH

1882-1942

Dr. John Keller Griffith, Slidell, a native of Port Hudson, was graduated from the Tulane University Medical School in 1908 and two years later went to Slidell to practice medicine. He served with the Medical Corps in the first World War. He was a former representative from the Sixth Congressional District, serving from 1936 to 1940. At the time of his death on September 25, 1942, he was President of the St. Tammany Parish Medical Society, and had long been active in medical affairs in his parish. He is survived by his widow, and two children, John K. Griffith, Jr., a student at Tulane University, and Mrs. Carolyn Groves of San Diego, Calif. The death of Dr. Griffith will mean a real loss to the medical profession of Louisiana, as well as innumerable patients of this much loved doctor.

WOMAN'S AUXILIARY

Attention—All parish Auxiliary presidents and treasurers. The address of the treasurer of the State Auxiliary has been changed, and you are now asked to send any payments going to the State Auxiliary to Mrs. R. C. Gowen at 5900 Line Avenue, Shreveport.

And again, attention. This time, parish presidents and publicity chairmen or secretaries. Please send in to the State Chairman of Press and Publicity, at 470 Audubon Boulevard, New Orleans, news items pertaining to your members, and accounts of the activities of your Auxiliaries. Your reporter cannot report unless you help her by serving as correspondents. What are your pet projects and how are you working them out?

Orleans Parish Auxiliary has issued a standing invitation to the wives of all Army and Navy doctors serving in New Orleans to be their guests at every monthly meeting and reception. The members are glad to know these fine women and

perhaps the visitors may be a little lonesome in a strange town, and glad to contact the wives of local doctors.

Orleans Parish Auxiliary has made a Christmas gift of subscriptions to six magazines to the patients at LaGarde General Hospital. This Auxiliary is also participating in the sale of War Bonds and Stamps.

Come on, other parishes. Let's leave Orleans out of the news next month and tell them what you are doing. Send me some items by the fourteenth of December, please.

Mrs. James W. Warren,
Chairman, Press and Publicity.

BOOK REVIEWS

Perineopelvic Anatomy from the Proctologist's Viewpoint; By R. V. Gorsch, A. B., M. D., New York City. The Tilghman Company, 1941. Pp. 298, illus. Price, \$8.00.

This is an excellent book. Careful study of its contents will richly reward anyone interested in perineopelvic anatomy. While written from the viewpoint of the proctologist, its value is not so limited.

The text is subdivided into nine chapters, each of which thoroughly covers its subject. Throughout, attention is given to embryologic, surgical, and other aspects as they pertain and relate to the anatomy under consideration.

Illustrations are numerous, clear, and well selected.

MAURICE LESCALE, M. D.

Plastic Surgery of the Breast and Abdominal Wall; By Max Thorex, M. D., LL. D., F. I. C. S., F. I. C. A. Springfield, Charles C. Thomas, 1942. Pp. 446. Price \$16.50.

This book deals with reconstruction procedures for congenital and acquired abnormalities of the female breast, particularly hyperplasia, inequalities, and other such lesions for which plastic operations may be indicated.

One of the most interesting features of this book, and one of its most commendable, is the fact that it tells the story very well with illustrations. They are excellent and are so well selected that the book is an outstanding example in medical literature of the adoption of some of the characteristics of illustrated weeklies in portraying information. Another interesting feature is the consideration of folk-lore, racial characteristics, and other curiosities concerning the human breast. The technic of operations is well diagramed and the pre- and postoperative photographs of some of the severer abnormalities illustrate what can be accomplished by the hands of a surgeon about to undertake this type of work. Included is a wise counsel in the

form of photographs showing bad results obtained by inexperienced operators. Equally expressive is the slight improvement obtained even by an able surgeon when the abnormalities themselves, as illustrated in the preoperative view, may have been considered relatively minor.

The reconstructive surgery of the abdominal wall consists mainly in diagramatic and clinical photographs with accompanying text, to illustrate the type and value of operative procedures; lipectomies, which sometimes may be indicated in cases of the pendulous abdomens of severe obesity.

This is a very interesting book. It obviously will have its greatest interest to the plastic surgeon.

HOWARD MAHORNER, M. D.

PUBLICATIONS RECEIVED

Lea & Febiger, Philadelphia: Diseases of the Liver, Gallbladder and Bile Ducts, by S. S. Lichtman, M. D., F. A. C. P.

The Williams & Wilkins Company, Baltimore: Nasal Medication, by Noah D. Fabricant, M. D., M. S.

D. Appleton-Century Company, Inc., New York: Osler's Principles and Practice of Medicine, by Henry A. Christian, A. M., M. D., LL.D., Hon. Sc. D., Hon. F. R. C. P. (Can.), F. A. C. P.

Coward-McCann, Inc., New York: When Doctors are Rationed, by Dwight Anderson and Margaret Baylous.

W. B. Saunders Company, Philadelphia: Manual of Dermatology, Military Medical Manuals, National Research Council, by Donald M. Pillsbury, M. D., Marion B. Sulzberger, M. D., Clarence S. Livingood, M. D.

The Manual Arts Press, Peoria, Illinois: Tables of Good Values, by Alice V. Bradley, M. S.

Charlotte Medical Press, Charlotte, N. C.: Bacteriology Laboratory Methods, by E. S. King, M. D.

Welfare Council of New York City, New York: Housekeeping Service for Chronic Patients, by Marta Fraenkel, M. D.

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THE FUTURE OF THE PATIENT WITH CORONARY OCCLUSION*

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GALVESTON, TEXAS

Within the past quarter of a century coronary occlusion has become one of the most important clinical entities in the field of internal medicine. The myocardial infarction that results from closure of a coronary artery produces such characteristic symptoms, signs, and electrocardiographic changes that its recognition is comparatively easy, and physicians generally arrive at the diagnosis correctly in a large majority of instances. In fact the clinical findings are so well known that they will receive only passing comment in this presentation.

It is of paramount significance that when an individual sustains a coronary occlusion he is from that moment on confronted with a problem of considerable magnitude, and one which will most probably have an important bearing on the remainder of his life. He may die from the acute phase of the illness, he may be left in a permanently disabled state that in some instances is partial, in others total, or he may recover more or less completely. It is my purpose to attempt to show what the coronary occlusion patient may expect of the future if he is fortunate enough to survive the initial effects of the occlusion and what his resulting status will be.

Every physician knows that considerable uncertainty exists in his ability to give an accurate prognosis in the case of a patient acutely ill from coronary occlusion. It is not uncommon to see those who are only slightly to moderately ill—both subjectively and objectively—die suddenly and unexpectedly, or from an unpredictable complication after a few hours, a few days, or a few weeks. Others much more gravely ill recover and may be able to lead nearly normal and useful lives for a good many years. Yet there are certain facts which stand out as fairly trustworthy guideposts in the effort to arrive at a correct prognosis.

In a recent publication Shillito, Chamberlain, and Levy¹ have emphasized the highly fatal significance of; first, a rectal temperature above 104 F., second, a leukocyte count of 25,000 or above, and third, a venous pressure over 200 mm. of water. Seven of eight patients in their series of 50 cases of uncomplicated coronary occlusion showing any one of these signs died within 16 days after the occlusion occurred. Only ten of the remaining 42 patients not presenting any of these signs succumbed. A temperature above 104 F., and a leukocyte count in excess of 25,000 speak strongly for a massive myocardial infarct, and it may reasonably be expected that the larger the lesion the less likely is recovery to occur. Venous pressure above 200 mm. of water indicates a high grade congestive heart failure, a factor that is admittedly of unfavorable omen.

Similarly, it is frequently observed that severe shock, marked tachycardia—120 per minute or above—deep cyanosis, pulsus alternans, gallop rhythm, enfeebled heart sounds and profound, and prolonged drop in blood pressure (80 mm. Hg. systolic or

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

†From the Department of Internal Medicine, The University of Texas Medical School, Galveston, Texas.

below) especially with a low pulse pressure carry a much more serious outlook than when these findings are absent or minimal. Again it should be emphasized that these signs, together with a rising venous pressure indicate that the degree of circulatory failure, both peripheral and central, is great, and as they occur in increasing severity the prognosis becomes worse. The intensity of the pain alone is not a reliable index to the seriousness of the acute episode.

Certain information of prognostic significance can be obtained from electrocardiograms particularly if they are made at frequent intervals early in the course of the illness. Subsequently they are highly useful in estimating the progress of recovery in the weeks and months after the acute process has subsided. Patients with curves showing bundle branch block and auriculo-ventricular block have the worst outlook for recovery, but in many such instances the acute phase passes, and restitution to good health follows. In complete heart block with Stokes-Adams seizures the prognosis is particularly unfavorable. In 10 to 15 per cent of the cases the electrocardiograms are non-confirmatory and may be normal or nearly so. Generally, this carries a favorable prognosis. Location of the site of the lesion is indicated by the curves in about two-thirds of the cases. Such studies show that anterior infarctions are somewhat more common than those located in the posterior wall of the heart, but such findings have little if any prognostic significance so far as recovery from the acute attack is concerned. Both groups show about the same immediate mortality. However, the longevity is shorter in those with anterior infarctions since they show a greater tendency to develop congestive heart failure than do posterior lesions.

Several writers, more recently Woods and Barnes,² have stressed the importance of frequent extrasystoles of ventricular origin. When ventricular premature contractions occurred as frequently as one in every two to ten heart beats, 82 per cent of their patients died within the acute period. The assumption is that the infarcted area constitutes

a highly irritable focus which initiates premature contractions. When these are frequent it is considered probable that they in turn may inaugurate ventricular fibrillation, an important cause of sudden death in coronary occlusion. Therefore, it is felt that frequent ventricular extrasystoles demand that oral quinidine therapy be promptly instituted and energetically carried out.

A small number of fatalities results from complications, chiefly embolic. Cerebral, renal, mesenteric, splenic emboli, and those to the extremities arise usually from mural thrombi on the wall of the left ventricle. Pulmonary emboli most frequently come from thrombi in the femoral and iliac veins. This occurred in 10 per cent of Woods and Barnes² cases. Pneumonia and other intercurrent infections account for another small percentage of deaths.

INCIDENCE

Men have coronary occlusion much more frequently than women in ratios variously reported from 3 to 7:1, and yet in almost every statistical study the death rate for women greatly exceeds that for men. It is a well known fact that the older the individual the less likely is recovery from coronary occlusion. Thus in age groups below 40 considerably less than 30 per cent fail to survive the acute phase; between 40 and 70 about 30 per cent die. In those above 70 the rate of mortality is 50 per cent or more. Since women tend to develop coronary occlusion at an age several years later than men some of the increased severity of the prognosis for immediate recovery in women may be explained on that basis. Silberberg³ suggests that increased frequency of hypertension in females may be a factor, but the fact remains that we do not have an entirely satisfactory answer to this question.

PROGNOSIS

In attempting to gauge the prognosis on the basis of age and sex, however, no very reliable criteria are available. It might be said that regardless of age or sex the important points to look to for guidance are: the rectal temperature, the leukocyte count, the venous pressure, the degree of shock as measured by the fall in blood pressure, the

lowness of the pulse pressure, the degree of cyanosis, the presence of marked tachycardia, the occurrence of serious disturbances of cardiac rhythm, certain electrocardiographic changes (already mentioned), and a progressive, unchecked congestive heart failure and peripheral circulatory failure. These signs singly or in various combinations bode ill for either sex and at all ages.

Practically all writers on the subject of the immediate prognosis in coronary thrombosis comment upon the extreme difficulty involved in giving precise estimates in given cases. In that opinion I am in complete agreement, but I do believe that a careful appraisal of each case, bearing in mind the facts cited in the foregoing paragraphs and combined with good clinical judgment will enable the physician to make the smallest possible number of errors.

MORTALITY

In an effort to determine the immediate fatality rate following coronary occlusion the statistics from a number of widely scattered centers have been collected, and the results tabulated in table 1.

TABLE 1
FATALITY RATE

Author	No. of cases	Death within 4 to 6 weeks	Per cent
		No.	
Connor and Holt ⁴	287	46	16.2
Silberberg ³	282	63	22.3
Clark ⁵	19	9	47.4
Levine ⁶	143	76	53
Howard ⁷	165	40	24.24
Master, Jaffe, and Dack ⁸	243	20	8
Willius ⁹	370	70	18.9
Cooksey ¹⁰	53	21	39.6
Rosenbaum and Levine ¹¹	208	68	33
Woods and Barnes ²	128	60	46.9
John Sealy Hospital ¹² cases	85	40	47
Total	1983	513	25.8

This figure of a 26 per cent mortality is probably as nearly accurate as can be obtained. If it is in error the likelihood is that it is too high, at least for those cases coming under medical observation, because even when cases are selected with the utmost care there will be included some in

which previous attacks have occurred, and in them the mortality is invariably higher than in initial attacks. On the other hand there are many patients with coronary occlusion who die suddenly. The great majority of these are not studied at necropsy, and hence are not correctly diagnosed. Some figures are available that may help in clarification of this unknown factor. In a recent report Kruse¹³ found that in 1718 sudden, violent and accident deaths in which necropsies were performed, 869 were due to "natural causes." Of the latter 556 were cardiac deaths and of them 338, or 39 per cent (of those due to "natural causes"), were due to disease of the coronary arteries. The pathologic findings in the coronary artery disease cases were summarized as follows: coronary occlusion occurred in 181 cases, coronary sclerosis in 70, and coronary thrombosis in 60 cases.

Taking into consideration the probability that approximately 40 per cent of sudden deaths due to "natural causes" are the result of coronary occlusion, the mortality rate for the acute phase of the disease must be revised upward. It seems reasonable to assume that it lies somewhere between 30 and 35 per cent. Therefore, the person who suffers a coronary occlusion is confronted with the probability of better than a 2:1 chance of immediate survival.

What then, of the 65 to 70 per cent who outlive the acute attack? In his classic description, "Clinical Features of Sudden Obstruction of the Coronary Arteries," James B. Herrick,¹⁴ in 1912, clearly recognized the possibilities with respect to recovery. He said: "Death is the result in nearly all cases. Yet it may be delayed for many days. More than this, there is, as has been shown by reference to experimental work, no intrinsic reason why some patients with obstruction of even large branches of the coronary artery may not recover. Experimental animals sometimes do. And as already said, mild cases must occur, and one cannot pretend to say where the dividing line should be drawn between the mild obstruction of a coronary branch, whose recovery means a few fibrous patches in the

myocardium, and the more serious one that in a few days is to lead to rupture of the heart or is to produce an extensive weakened fibrous area that will ultimately yield in cardiac aneurysm." Since Herrick's monumental contribution 30 years ago we have learned that fully two-thirds of the patients do survive the initial attack.

Furthermore, it is a matter of common information that many patients have a long survival. One of my cases recovered from a severe coronary occlusion 15 years ago, and is now leading a busy, useful life free from symptoms and signs of heart disease. Others are carrying on eight to ten years from the date of their occlusions. White¹⁵ reported the case of a man who died in his seventy-third year, 25 years after his first coronary occlusion, and Drake¹⁶ cites one who died suddenly at the age of 80 from a nocturnal attack of angina pectoris nearly 40 years after the initial attack of myocardial infarction.

A number of writers on this subject record instances of long survival up to 20 years or more, but such cases are admittedly the exception. Drake¹⁶ concluded, from the published figures from "several large groups" that the average duration of life is slightly over two years. Levine and Rosenbaum¹⁷ found 41.1 months to be the average survival time of 101 patients studied by them, and Palmer's¹⁸ 65 patients who were followed till death lived an average 4.2 years. When it is recalled that the most frequently observed coronary occlusion patient is between 50 and 60 years of age at the time of the first attack, it will be readily appreciated that many will reach an age equal to or beyond a normal life expectancy.

It is a well established fact that the great majority of patients who have a coronary occlusion die from heart disease in some form. Apparently more than one-third succumb to a subsequent attack of myocardial infarction if there are accepted the established cases plus a somewhat indefinite number that die suddenly, since obviously some of the latter have termination due to unproved coronary occlusion.

ANGINA PECTORIS

Angina pectoris precedes coronary occlusion in from 22⁹ to 72¹¹ per cent of patients reported in various surveys. It also occurs frequently after an occlusive episode in some instances in which it was previously absent. In neither event is there conclusive evidence to show that the post-occlusive average duration of life is shortened, though without doubt such patients experience more subjective symptoms, and are more seriously incapacitated than those without a post-coronary occlusion anginal syndrome. Patients with angina pectoris furnish a considerable number of cases of sudden death, some due to a massive myocardial infarction, some due to ventricular fibrillation and others as now seems well established to cardiac standstill.¹⁹ A small percentage of persons who present a history of angina pectoris prior to the occlusion experience no anginal attacks after recovery. This is not well explained. In some it appears to be due to a lowering of the blood pressure, but in others no suitable explanation can be given. In any event such an occurrence has no prognostic significance.

CONGESTIVE HEART FAILURE

Another group of coronary occlusion cases die after an interval of months or years from congestive heart failure. In Palmer's¹⁸ series it accounted for 13 per cent, in that of Levine and Rosenbaum¹⁷ it caused death in 20 per cent, and in 370 cases studied by Willius⁹ "gradual cardiac failure" was the mode of exitus in 52 per cent. Palmer¹⁸ stated that in the group of 212 cases observed by him congestive failure occurred only in those with enlarged hearts, and furthermore that following recovery from an attack of coronary occlusion the probability is twice as great that the patient with a normal sized heart will be able to lead an active life as one with an enlarged heart. Hypertension existing either before or after myocardial infarction appears to exert but slight influence on the longevity except as it may be the etiologic agent in cardiac enlargement.

The cardiac death rate increases steadily with each succeeding attack of coronary oc-

clusion. As previously shown about one-third die from the first infarction; the rate doubles for second attacks, and approximately three-fourths fail to survive a third. Of Willius¹⁹ cases 80 per cent had a single coronary occlusion, in 17 per cent two episodes occurred, and 2.2 per cent had a third. Some series give higher percentages than those for multiple attacks. On the basis of these figures it may be asserted that patients surviving an initial attack of coronary occlusion have a greater likelihood of subsequently developing other cardiac complications, notably angina pectoris and congestive heart failure, rather than further attacks of myocardial infarction. As regards these two most frequently encountered end results, angina pectoris is much more common, but it does not appear to shorten greatly the period of survival, whereas in congestive failure following coronary occlusion the average survival period is reduced by about 25 per cent. It was pointed out by Levine and Rosenbaum¹⁷ that congestive failure occurs more than twice as frequently with anterior infarctions as compared with posterior lesions.

A very small percentage of recovered coronary occlusion patients die non-cardiac deaths, about 5 per cent in most series. This emphasizes strongly the fact that once a myocardial infarct of appreciable extent has formed the threat of future disaster from heart disease in some form is an ever present possibility.

So far, consideration has been largely given to the unfavorable side of the picture. What is the future for those surviving an initial attack or even subsequent ones? Slightly more than half the patients will be able to return to work, either part or full time. Of this group about 50 per cent experience mild anginal seizures, dyspnea or weakness to a degree not incompatible with ordinary activity.

SUBSEQUENT CARE

The average patient should be kept at complete rest for from six weeks to three months after a coronary occlusion. Following this period another three to six months should be required to restore gradually the

individual to former activity, and/or to determine his fitness for or limitations concerning future effort. As Master, Dack and Jaffe²¹ have emphasized, and apparently proved by their investigations, effort, or other preceding states have nothing to do with initiating the attack of coronary occlusion which is an end result of atherosclerosis of the coronary arteries. Therefore, there is no reason to believe that factors involved in the occupational status are more than coincidental in favoring the onset of coronary occlusion, nor are these same factors likely to precipitate further attacks after recovery and the resumption of activity. It does go without saying, however, that hard labor is usually not so well tolerated after recovery from coronary occlusion because of the incident lowering of the cardiac reserve in many instances. On the contrary, experience has amply proved that it is decidedly advantageous to patients to resume some, if not all, of their former activities. The tendency of cardiac patients to develop a state of chronic and frequently unjustified disability and invalidism as much from psychogenic reasons as from the heart disease itself is too well known to require comment. The duty of the physician is to offset this as far as possible, consistent with sound principles. It is his obligation to rehabilitate the patient as much as it is to apply sane and judicious therapeutic practices in the course of the acute illness.

There is no justification for the belief that coronary occlusion alone constitutes total permanent disability, even though its complications and sequelae may do so. All too frequently patients who have made complete recoveries are confronted with the difficulty of returning to their former jobs, after myocardial infarction, because of the restrictions imposed by employers' liability under workmen's compensation laws. It has been suggested²² that those so affected should, in fairness to themselves and their employers, sign waivers removing liability for subsequent cardiac illness. This would overcome some of the present obstacles to the restitution of many persons with coronary artery disease. By the same token

fully recovered patients should not be certified as totally and permanently disabled in order that they may take advantage of disability insurance, unless a gradual and conscientious effort to restore them to activity has failed.

In 1939 the American Heart Association appointed a Committee to Study Coronary Artery Disease. This committee compiled a large amount of information from a total of 228 replies to a comprehensive questionnaire that was sent to outstanding cardiologists and teachers of medicine. The overwhelming majority opinion was:

1. Every person who has sustained a coronary occlusion is not totally and permanently disabled.

2. From 50 to 80 per cent of patients who have recovered from coronary occlusion may be permitted to attempt partial or complete resumption of activity.

3. That angina pectoris and congestive heart failure are the most important handicaps to a resumption of activity.

4. Patients who have recovered from coronary occlusion, but who have angina of effort should be treated with especial precautions to prevent chronic invalidism.

5. Effort that causes no cardiac symptoms does not shorten the life of the patient who has recovered from coronary occlusion.

6. A return to business or profession, with some modification of activity, does not exert an unfavorable influence on the course of coronary disease, nor does it increase the tendency to further coronary occlusion or shorten life.

7. The fully recovered patient may be permitted to return to business or professional activities in from three to six months.

8. It is safe for patients who have recovered from coronary occlusion to drive automobiles.

9. That recovered coronary occlusion patients may be allowed to return to occupations covered by industrial law, with restrictions.

CONCLUSION

It may be said that the immediate fate of an individual stricken with coronary occlusion

is difficult to predict. Certain easily obtainable evidence may be of assistance in arriving at a fairly reliable prognosis. At least two-thirds of the cases recover, and of them a majority may be restored to an active and useful life without undue hazard resulting therefrom. A careful study of the facts does not warrant a hopeless outlook for the patient who has survived the initial attack, but, on the other hand a degree of enlightened optimism is not unreasonable.

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DISCUSSION

Dr. A. A. Herold (Shreveport): Dr. Stone has brought us a very timely subject, one which should be of interest to any medical gathering. He has talked about a doctors' disease. As you know, I am sure, a large per cent of doctors die of heart disease, most of which is coronary trouble. I hope you will pardon a personal illustration, referring to first person singular. I would say this subject was very interesting to me last summer. I went to bed with what some of my confrères called a coronary attack. "The future of the coronary thrombosis patient" was uppermost in my mind!

Dr. Stone gave some very interesting guides in prognosis. Let me say here that I think the hardest thing we have to deal with in the practice of medicine is prognosis in general. I know you have experienced this in these heart cases. He stressed high temperature, high leukocytosis and venous pressure as important guides. Low pulse pressure and rising venous pressure are important.

Cardiographic studies very often are misleading in prognosis, especially if taken very soon after the supposed attack. I have seen doctors misled by taking an electrocardiogram 48 hours after an attack in which the definiteness is not there and they have to be studied further. That is where the cardiogram comes in, for comparative purposes.

Dr. Stone also told you that this condition is more common in men than in women. I am sure that is our experience too.

Another form of coronary occlusion to which he has referred, not due to thrombosis, is gradual closing with sclerosis. I had such a case, a man with recurring attacks, diagnosed coronary thrombosis. At autopsy, there was no evidence of thrombosis; coronary arteries firmly closed and when we succeeded in opening with scissors, the sclerosis was so complete, it grated on the instrument.

THE RATIONAL MANAGEMENT OF BRONCHIECTASIS*

CHARLES R. GOWEN, M. D.
SHREVEPORT

In discussing the management of bronchiectasis, it is well to mention briefly the

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etiology, the prophylaxis, the pathology, the symptoms, the diagnosis and the prognosis. By understanding these, one is able to deal with this condition intelligently as it cannot be treated or managed without a knowledge of the causative agents and the mechanical factors involved in this condition. All of these will be briefly reviewed at this time.

ETIOLOGY

The etiologic factors can be divided into three main classifications: (1) Defects in the bronchial wall from lack of development in early life; (2) inflammatory conditions; (3) mechanical strain and stress on the bronchial wall itself.

The discussion of embryologic changes that occur in the bronchial walls will be limited to the fact that any condition that prevents the complete aeration of the lung immediately after birth, or some unknown causes before birth, will have a tendency to weaken the bronchial wall and cause defects in varying degrees.

The condition that concerns the physician most is the inflammatory reactions in the lung at any period in life. From my own personal experience, I am sure that the handling of acute, subacute and chronic bronchial irritations of any kind at the early stage can prevent the development of a definite bronchiectasis or a bronchiolectasis in a large per cent of the cases later on. The relationship between the sinuses and the bronchial tree is definitely established by many workers and sinusitis can be considered one of the causes of bronchiectasis. The percentage varies with different workers. Many manifestations of allergy are definitely responsible for some cases of bronchiectasis.

In the third classification, that of mechanical strain and stress, can be placed atelectasis. In this instance, there is a definite negative pressure in the thoracic cage and a pulling apart of the bronchial walls, which causes dilatation. In the obstructive type would be neoplasm, foreign bodies and scar tissue from previous inflammatory changes in the bronchial walls, of which

tuberculosis and syphilis are the most frequent causes.

PROPHYLAXIS

In the first classification of bronchiectasis, there is very little we can do. Usually the damage is done before the condition is recognized. On the other hand, in the inflammatory type, such as any of the acute diseases that affect the bronchial tubes—*influenza*, *bronchopneumonia*, *bronchitis* and the acute respiratory infections—everything should be done to keep the secretions from accumulating and becoming organized so that they fail to drain all portions of the inflamed bronchial tree. The use of expectorants rather than sedatives, the liberal use of mild inhalations of steam plus postural drainage usually prevents this complication. If the secretions can be kept moving and the organization of any given portion of the bronchial tree prevented, it is impossible to affect the bronchial wall. We know the greatest damage comes from the infections of the lymphatics in and around the bronchial tubes, and the so-called interstitial *pulmonitis* plus the weight of secretions is considered the usual cause of the breaking down and weakening of the bronchial wall. The prevention of bronchiectasis in the obstructive type is perfectly clear, by the use of the bronchoscope. If possible, the clearing away of granulated tissues and new growths, the dilatation of the stenosis and sometimes a simple shrinking of the inflamed mucosa may relieve this condition. All cases of chronic bronchial conditions should have a careful check of the sinuses, teeth and all possible foci of infection and should be cleared up if possible.

PATHOLOGY

Considering the pathogenesis of bronchiectasis, one must realize that there are varying tissue changes in the bronchial tubes according to the type of dilatation. It has been demonstrated repeatedly that at times there is a definite diverticular type of dilatation where there is a break in the bronchial wall or an actual tear into the lung tissue. In other areas, there will be a

definite dilatation or stretching of the entire circumference of the bronchial tubes. In other instances, the interlining remains intact but there is a giving away of the deeper structures and the lowering of tone in the bronchial muscle wall and its elastic tissue. At another point, there is the breaking apart of the bronchial wall which forms a rather definite cavity and gives the appearance, when filled with iodized oil, of a sacculation. The age of these lesions determines to a great extent the type of cell lining them.

In studying a large number of slides prepared by Dr. Matthews of the Shreveport Charity Hospital, we have found these various types existing in the same lung. All granulated tissues replacing normal bronchial structures are highly vascular and new vessels directed toward the surface have fibers of scar tissues running throughout like a skein. The parenchyma of the lung in this area adjacent to the dilatation is usually slightly collapsed. There is also a marked increase in the secretory glandular structures which accounts for the profuse expectoration. The cartilage itself is not grossly affected but at times markedly displaced. Patches of *emphysema* are also noted. *Endarteritis* and lymphoid hyperplasia are conspicuous.

SYMPTOMS AND SIGNS

The classical symptom is a severe cough with profuse expectoration which separates out into three layers; a frothy layer at the top, liquid for the second layer and a sediment at the bottom layer. From time immemorial this has characterized the classical description of a bronchiectatic sputum. This only occurs in the long-standing, well-established case with good drainage and certainly fits that picture most admirably.

The case that gives the physician most concern is the border line patient who has repeatedly attacks of respiratory infection with visible increase in cough, increase in sputum and at times obviously sick for several days until the sputum loosens up and begins to drain out. In the bronchial tree, as in any other condition, free drainage of

all infected areas is absolutely essential. Due to new blood vessels forming in granulation tissues and the breaking of blood vessels of the bronchial wall, the sputum is often blood-streaked. Occasionally there is a free hemorrhage if a large blood vessel is injured.

The physical signs of bronchiectasis will not be discussed here as they vary so much that it is impossible to discuss them intelligently. The symptoms can be classified and will fit any acute or chronic lung condition and must be differentiated from tuberculosis, syphilis or bronchial carcinoma, which may complicate it at any time.

DIAGNOSIS

The diagnosis of bronchiectasis can only be established by filling the bronchial tree with an opaque substance and studying it roentgenographically, giving a clear picture of just what is being dealt with. Any other method falls short. The method used is rather simple and may be varied according to the doctor's own choice—any way that he can get an opaque substance into the bronchial tree is sufficient. Before a rational conclusion can be reached, all lobes of both lungs should be visualized.

Iodized oil should be introduced into the bronchial tree and the patient should be placed in different positions to visualize all lobes of both lungs. I have found that it is always a safe procedure to test an individual for iodine sensitivity before injecting the iodized oil into the bronchial tree. It is also best to give an expectorant and have the patient drain all possible areas in order to allow the oil to penetrate out even to the smaller bronchioles. If this is not done, the complete picture cannot be obtained. The bacterial flora found in the expectoration changes from time to time and does not give one a clear picture of the actual cause. It has been found in a large percentage of cases that the Vincent's spirochetes are in predominance in the sputum; whether they are primary or secondary is open to question. The various forms of yeast and fungi are also present, and as mentioned before, change from time to time. The amount and

character of sputum raised is some guide as to the size of the dilatation but might be of very little diagnostic value since there is an increase in the glandular structures in the dilated bronchial tubes and the only possible way to be sure that one is dealing with a dilatation of the bronchi or bronchiole is to study the exact size of the tube after it has been injected with iodized oil.

PROGNOSIS

The prognosis of the case depends on the extent and location of the diseased bronchi. Once a bronchus or bronchiole is dilated, there is no way of bringing this tube back to a normal bronchial tube. In recent years, thoracic surgery has promised relief now to a great many people who otherwise could not have regained anything but a fair degree of health. A lobectomy or pneumonectomy does not carry the same mortality now that they did several years ago and they should be considered in every case in which there is a fair chance for success. Pneumothorax also offers relief and in some cases, an apparent relief of symptoms, but it has not been used in a large enough number of cases in my experience to warrant recommending it. Phrenic interruptions and phrenicectomy also have promised marked benefit to a great many cases. The main object of this discussion is the management of a case which will not and does not warrant more radical surgical procedures. We all know of a large number of individuals with dilated bronchi who go through life and live out their expectancy, but their comfort and longevity will depend on how well they keep the bronchial tree drained.

TREATMENT

The real management of bronchiectasis is definitely divided into drainage, specific medication, supportive treatment and radical operative procedure. X-ray is of questionable value.

Postural drainage heads the list always and should be carried out every three or four hours in an acute exacerbation and then as often as necessary in the individual case to keep the patient comfortable and

relieve the annoying hacking cough. To accomplish the proper drainage, the patient should be in the following position: The mouth should be at least 18 to 20 inches below the base of the lung and the patient should be instructed to turn from side to side. He should breathe deeply and make every effort to cough. This will force air distal to the secretions and cause it to be expelled. This position should be maintained until the bronchial tree is thoroughly emptied. At times, where there is an obstruction, a constriction or narrowing, a bronchoscope should be passed and whatever obstruction is found should be cleared out, especially if this is a new growth or some foreign body. Often patients are relieved by dilating the bronchial tubes with adrenalin and pontocaine with the aid of mechanical dilators. The secretions can be aspirated also. There has been considerable work done with the use of iodized oil in the actual treatment of bronchiectasis with satisfactory results. The iodized oil displaces the sputum and, being heavier, dislodges it and it is expelled with a lessening of the toxic symptoms. This is only temporary and should not be repeated too often as there is a possibility of getting some iodine reaction.

Specific medication might be classified as any medication that would change in a limited degree to the character of sputum. Some of the milder creosote preparations have been helpful, providing they are tolerated by the patient's gastrointestinal tract. Ammonium chloride is the most useful preparation as potassium iodide might weaken the already inflamed bronchial wall. Autogenetic vaccines have given considerable relief, if the material is obtained through a bronchoscope. An occasional use of neoarsphenamine intravenously or bismuth intramuscularly, when there is a definite Vincent's spirochete found in the sputum, could be recommended.*

*Sulfonamides are of use if the predominating organisms are streptococcic and pneumococcic but only in the acute exacerbations.

In supportive treatment and general care, the patient should be told to take definite rest periods, avoid strenuous exertion to the point of marked dyspnea, avoid exposure and dust. If the patient suffers from any upper respiratory disturbance, such as chronic sinus or pyorrhea pockets or chronic tonsillitis, he should take measures to have them corrected since it has been proved there is a direct connection through three open channels—lymphatic, bronchial and blood stream. The bronchial tree is affected by any inflammatory condition in the sinuses opening into the upper air passages, the teeth and the tonsils and we cannot expect to get relief or results without getting at the cause of the condition.

SUMMARY

The surgical procedures that have proved of value are pneumothorax, phrenic interruptions, lobectomy and pneumonectomy, but these do not come in the scope of this discussion. It might be well to mention that the age of the patient, his general condition and the various circumstances surrounding the patient would make the decision on the course or type of operation indicated.

DISCUSSION

Dr. Julius L. Wilson (New Orleans): I enjoyed Dr. Gowen's paper very much because it was a practical paper. He has based it upon practical experience. Most of the papers on bronchiectasis get into too much theory and not enough of the actual management of cases. In childhood and youth the only curative treatment is surgery. The management of these cases, 60, 50, and 40 years old is another and very difficult matter. I think he rightly emphasized postural drainage as one measure for clearing the bronchial secretions. Postural drainage should be the first treatment of these cases that have chronic expectoration,—not only postural drainage for three or four hours, but constant postural drainage, with the foot of the bed elevated 18 inches on shock blocks. Giving constant drainage is very valuable over a period of a week or two. Bronchoscopy is a very important supplement. Personally, I am opposed to the routine use of lipiodol. It is not curative; it is palliative. Another method of producing expectoration, which can be applied more safely, is the use of ammonium chloride or potassium iodide by mouth. I believe that we may do harm by the introduction of lipiodol, a foreign body, into the lung. Certainly, it is bad medicine when it spills

over into the more normal bronchial tree and gets into the alveolar structures of the lung.

The sulfonamides are helpful and should be used when the patients have a pneumonitis. In some cases preoperatively they will help clear infection. We have not been impressed with the number of cases that have spirochetes and fusiforms. In most cases of long standing bronchiectasis the search for spirochetes in the sputum is not successful. Mechanical obstruction of the bronchus favors infection, and anaerobic infection may be an important factor. In such cases, the use of arsenicals may be indicated.

I think this paper is most valuable, particularly in the management of older patients not suitable for operation, and in the treatment of the younger patient before operation.

One word on pneumothorax. Some years ago, Dr. Rist advocated pneumothorax, particularly in children, and there was a wave of enthusiasm for this treatment. Pneumothorax can seldom be completed because of adhesions. If it be successful, we get a benefit which lasts as long as we maintain the pneumothorax and then find that there remain the same pockets which existed before. So pneumothorax is generally disappointing in these cases.

Dr. J. Preston Davis (Lake Providence): The speakers mentioned the use of arsenicals in certain cases of bronchiectasis. I know that bronchiectasis and bronchial asthma are separate entities, but it is my impression it is very dangerous to use in bronchial asthma. I would like to know about this.

Dr. Randolph Lyons (New Orleans): I would like to ask Dr. Gowen and Dr. Wilson if they could give me some idea, approximately, of the mortality in lobectomy in the surgical treatment of bronchiectasis. Dr. Wilson suggested that it be done in young patients because the operative risk would be a great deal less. I feel that even in middle aged persons there is a great deal of risk.

A patient I saw in consultation was operated on for bronchiectasis. She was a woman whose main symptoms were discomfort, chronic cough, and expectoration. She was a housewife and able to look after her affairs. She decided to have the operation done and died several days after the lobectomy of pneumonia of the opposite lung. I was asked to see the patient because of the involvement of the remaining lung. This was an unfortunate result but should not discourage operation in severe cases.

I would like to have an idea of the mortality of the operation in good hands.

Dr. Charles R. Gowen (in closing): In regard to the use of arsenicals in any bronchial condition, as I explained in my first discussion, I was only trying to discuss the management of a definite

bronchiectasis so diagnosed. Now, in the various forms of allergic bronchitis and chronic bronchitis, I do not think at any time we should inject arsenicals into the vein which we know goes directly into the heart, and the next second highest concentration of that product is around the bronchial tree throughout the lung, and we get the maximum reaction there. If the patient is slightly sensitive to arsenicals we will get increased reaction. We use arsenicals in chronic bronchiectasis where there are spirochetes, but when we get into asthmatics we are dealing with a different situation.

As to Dr. Lyons' question regarding operative mortality, I can remember and most of you can too, when surgeons first started doing lobectomy. The mortality has dropped consistently since then. I think about the best figures are 4 to 5 per cent.

The preparation of the patient and the postoperative care, more than the technic of operation, have more to do than anything else. These cases can be managed, and if the individual is going along fairly comfortably, do not operate, because the closing of the cavity in the lung in lobectomy is not keeping the patient on his feet.

WAR WOUNDS OF THE CHEST*

HARLON W. HARRISON, M. D.

SHREVEPORT

Modern warfare, with the indiscriminate bombing of the civilian population has made every physician a potential military surgeon. In past wars, wounds of the chest have caused a very high percentage of the deaths and there is every reason to believe that with aerial bombs and high explosive shells playing an increasingly important part in warfare, that chest wounds will become even more important. Hoche has shown that while among the eleven million American, English, French and German soldiers wounded in World War 1, only 6 per cent suffered from wounds of the thorax; the mortality from such wounds was 56 per cent. This was second only to wounds of the abdomen which was 68 per cent. The mortality from all wounds was 8 per cent. Trueta has shown that in the recent civil war in Spain among 9,850 patients treated in the hospitals of Barcelona, 12.1 per cent

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had thoracic injuries. Crafoord states that wounds of the chest are still responsible for from 30 to 40 per cent of all war fatalities.

Ranson has presented the interesting fact that as the result of improvements in the method of handling war wounds of the chest, the mortality has steadily decreased. In the Crimean War the English lost 79.2 per cent of the soldiers who suffered from wounds of the chest. In the American Civil War the mortality was 62.6 per cent; the Germans in the Franco-Prussian War 56.7 per cent; British in the last war 27.5 per cent, and the Chinese in the Sino-Japanese War 14.8 per cent.

It is very probable that this improvement has resulted to a large extent from the increased knowledge of the physiology of respiration as well as the improvement in surgical technic generally. No better example can be found of the fine results which can be obtained by the proper and prompt handling of war wounds than that reported by Moorhead in his "Experiences at Pearl Harbor."

In order that we may better understand the reason why certain measures are necessary when we are confronted with war wounds of the chest, we must understand something of the physiology of the chest, as it influences surgical procedures, and we must also understand something of the forces and missiles which produce war wounds.

PHYSIOPATHOLOGIC CONSIDERATIONS

The thorax is a relatively firm bony cage containing vital organs whose efficient function is dependent upon the maintenance of a normal negative intrathoracic pressure. Wounds of the chest, and especially war wounds, as they are usually more severe and more extensive than those in civil practice, often upset this balance. Thomas has outlined the conditions producing this interference as follows: (1) The presence of air or blood in the pleural cavity under sufficient pressure to encroach not only on the homolateral but also the contralateral lung as a result of the ensuing mediastinal displacement, this displacement at the same

time producing severe cardiac disability, chiefly by inefficient filling as a result of distortion of the superior and inferior vena cava and the absence of the aspiratory effect that the negative intrathoracic pressures usually exerted on these structures.

(2) Open pneumothorax: The ill effects of this condition briefly stated are: (a) Lung collapse of the affected side; (b) pendulum swing of air during respiration from the expanded to the collapsed lung and vice versa; (c) mediastinal flutter and paradoxical swing of the mediastinum during inspiration and expiration with the stimulation of the contained cardiac and pulmonary plexus; (d) loss of aspiration on the great vessels leading to deficient diastolic filling of the heart, in its turn leading to deficient cardiac output. (3) Cardiac tamponade: This results from fluid in the pericardial sac constricting the heart and preventing efficient diastolic filling. (4) Stove in chest, producing essentially the same effect as an open pneumothorax by allowing for paradoxical respiration.

Just as wounds of the chest differ from wounds of the other parts of the body, so do war wounds of the chest differ from wounds of the chest seen in civil practice. The former are usually more severe and more extensive. We can hardly treat war wounds intelligently without at least an elementary knowledge of the agents which cause them. Projectiles can be divided into three main groups: (1) rifle, revolver and machine gun bullets; (2) shells from artillery, and (3) bombs. To this list of common methods of war trauma we must add crushing by falling masonry and the pressure by "blast." Both of these latter are largely the result of the development of aerial warfare.

ACTION OF SEVERAL TYPES OF MISSILES

Bullets from rifles and machine guns are all essentially the same. The range of the modern rifle is from one and seven-eighths to two and a quarter miles. The muzzle velocity of the German rifle bullet is 2800 feet per second, but after traveling for about 600 yards this velocity is reduced to 1100 feet per second. The velocity of re-

volver and submachine gun bullets is considerably less. If a bullet drills a clean hole it gives the surgeon relatively little trouble unless a vital organ or a large vessel is struck. As the velocity of a bullet decreases, however, it begins to wobble and may even turn end over end due to air resistance. If such a bullet strikes in such a position as to have the long axis of the missile at right angles to its direction of flight, the damage may be more extensive. Usually the wound of exit, if there is one, is much larger than the wound of entrance.

Projectiles fired by artillery are high explosive shells. These consist of thick iron casings enclosing a quantity of violently explosive trinitro-toluene. Bursting is brought about by means of a detonator which comes into action by impact. The fragments vary in size from minute particles to pieces weighing several pounds. The shells weigh from 15 to 120 pounds and break into 600 to 1500 fragments. These pieces are jagged and when they penetrate the chest wall they produce large wounds with extensive tissue damage. They often carry fragments of clothing into the wound ahead of them.

Aerial bombs are to a great extent a product of the present conflict and in this respect this war differs from its predecessors. This brings several new factors into the picture. First, as the result of the important part played by the aeroplane, the fighting man (and the civilian) is as much exposed to the enemy above him as he is to the enemy in front of him. The aerial bomb breaks into innumerable tiny fragments and is as apt to strike in back of a person as in front of him, and the person may suffer from multiple wounds on either the anterior or posterior surface of his body. Someone has said that this conflict is "the war of the crouching man" because when a person hears enemy planes overhead he instinctively crouches or falls to the ground.

There are three other effects resulting from aerial warfare. One is, since the aerial bomb is not subjected to the same great force that the shell is when it is fired, it does not need the heavy casing that the

high explosive shell does. As the result the relative weight of explosive contained in the aerial bomb is much greater. When the explosion of one of these bombs occurs the fragments are much smaller and have a much higher velocity than do other types of projectiles (4,000 feet per second). Even though these particles are small, it has been found that even small pieces traveling at such a velocity have a devastating effect on tissue. While on the surface there may be only a trifling wound, beneath the skin there is an extremely widespread destruction. The effect is similar to that produced by an internal explosion.

A second effect of the aerial bomb is the fact that it causes buildings to collapse (a ton bomb leveling almost everything in a city block) and the falling masonry causes many crushing injuries.

A third effect of the violent explosive aerial bomb is "blast." It results from the detonation of the bomb. Zucherman states that in such an explosion the solid explosive is converted into gases which are confined in the casing at a pressure which has been estimated as between 100 and 650 tons per square inch. As a result of this pressure the casing is blown to pieces, the gases escape, and by their expansion produce a blast wave in the surrounding air. The blast has two components, the pressure exponent and the suction component. This force causes extensive damage to the lungs. This will be considered later under the treatment of the various types of wounds.

Bayonet wounds are comparably infrequent. During the 1914-1918 war, wounds from bayonets comprised less than 5 per cent of the wounds. In this conflict the percentage will probably be lower. In fact there is a motion on foot to discard the bayonet. The Germans have done this already, supplying in their place, daggers.

TREATMENT OF THE COMMON WOUNDS

It is impossible within the scope of this paper to cover completely all the literature on wounds of the chest or consider in detail all of the various forms of injuries which may occur. An excellent exhaustive review of the literature has recently been presented

by DeBakey. I will attempt to mention only the more common conditions which may exist and outline their treatment.

Wounds of the chest may be divided into non-penetrating and penetrating wounds. In this conflict we are seeing more of the former than in previous wars. This is due to falling masonry and blast, and the damage caused to the intrathoracic viscera may be extensive without any apparant damage to the chest wall. These lesions are commonly associated with rather severe shock, and sometimes with serious hemorrhage which is not immediately perceptible.

Berry has stated that the principles underlying the treatment of thoracic injuries are: (1) The treatment of the surgical shock and hemorrhage, if present, by institution of appropriate measures and (2) the restoration of the thoracic viscera and the cardio-respiratory physiology to their normal status as soon as possible. Blades has emphasized that shock in severe chest injuries differs somewhat in manifestations and management from that observed in wounds of other parts of the body. In the former the mental condition is usually active and anxious and because of possible mechanical interference with vital capacity due to hemorrhage or to an open pneumothorax, dyspnea or even cyanosis may be prominent manifestations. Painful respiratory movements and coughing may further increase these difficulties. For these reasons first aid measures must include not only the treatment of the primary shock, but also the correction of the factors causing respiratory difficulty.

The pain and restlessness resulting from these wounds are greatly relieved by the use of morphine. It has been found that it is usually advisable to give 1-2 grain as the initial dose. The patient should be placed in a comfortable position, which is usually the sitting or propped up position in chest injuries, because breathing is easier in that position. The chest should be immobilized. This can be accomplished by multiple adhesive straps, multiple tape binder, or as Blades suggests, the complete encircling of the chest with a wide strip of adhesive at

the level of the costal margin. This tape is applied on expiration. Prompt and adequate intravenous fluids, preferably plasma or blood should be administered to combat shock. The patient should be kept warm. During the period of shock, especially before the tape is applied, the patient should be rolled toward the affected side so that respiratory motion is limited on that side and any paradoxical motion is reduced to a minimum. The administration of oxygen is a valuable adjunct in the treatment of shock and relief of dyspnea and cyanosis. Transportation is very hard on patients suffering from chest wounds and Roberts and Tubbs state that in England it has become the established practice to move only those patients who need early primary operation. Even air transportation is bad for chest cases, where there is a pneumothorax present.

Hemorrhage, if present, must be controlled by ligation or in some other way stopping the flow of blood, and replacing the blood by transfusion with whole blood or plasma.

Wounds of the non-penetrating type are becoming increasingly more important due to falling masonry and the effect of blast. When a person suffers from a non-penetrating, especially a crushing injury, of the chest extensive damage can be done to the viscera with no perceptible injury to the chest wall. This is especially true with children whose chest walls are soft and elastic. The heart, lungs or great vessels can be torn with no damage to the chest wall.

Probably the most simple thing that can occur is a simple fracture of a rib. The easiest way to treat these injuries is by strapping the chest with adhesive. This can be done by placing one wide band all the way around the chest at the level of the costal margin or by placing several overlapping strips over the site of injury and extending three or four inches beyond the midline both anteriorly and posteriorly. If a rib fragment is displaced it can be brought back in place by putting a towel clip around it and exerting traction. This is rarely necessary. Latteri has suggested

injecting the intercostal nerves with alcohol, thus placing that portion of the chest at rest. Harmon, Baker and Kornegay have suggested injecting procaine between the rib fragments to reduce pain, especially during transportation. If the rib is jagged it may tear an intercostal vessel. The treatment of this condition will be considered later as will the result of penetrating the lung with the rib end. When several ribs are fractured we have a "stove in" chest, and as this produces paradoxical respiration, it must be immobilized.

Fractures of the sternum are usually associated with injuries of the viscera and these usually must be taken care of first. They are usually also associated with considerable shock. The sternal fracture itself can usually be reduced by hyperextending the chest and neck with a sand bag between the shoulders. At the same time pressure is exerted on the protruding end of the overriding segment.

Bleeding from intercostal or internal mammary vessels which may be torn in nonpenetrating or penetrating wounds of the chest may be serious. It is commonly necessary to operate on these patients in order to find the bleeding point and tie it off. Intercostal bleeding can also be controlled by passing subpleural sutures around the rib both proximal and distal to this bleeding point. In an emergency, towel clamps may be clipped around the rib in a similar manner as a temporary "tourniquet."

Fractured rib ends may tear into the lung. This may cause hemorrhages into the pleural cavity, pneumothorax, subcutaneous or mediastinal emphysema. Subcutaneous emphysema is rarely serious, but it becomes too troublesome or if the tension on the skin is too great, multiple small incisions may be made through the skin to allow for the escape of air. If the leaking from the lung continues it may be necessary to do a thoracotomy and put a purse string around the tear in the lung.

When there is bleeding into the pleural cavity either from the lung or vessels in the chest wall or when air leaks into the pleural

cavity from the lung, severe pressure symptoms may develop from the collection of blood or air present. As either of these increase in amount the homolateral lung is collapsed and the vital capacity is decreased. As more develops there may be a mediastinal displacement with displacement of the heart and collapse of the contralateral lung. Unless this pressure is relieved death may occur in a relatively short time as the result of the depletion of the cardio-respiratory reserve.

A tension pneumothorax may be relieved by repeated needle aspirations if the rate of leakage is not too rapid. If it is too rapid to be controlled by this means an intercostal catheter should be inserted and connected to a tube, the end of which is put under water to form a water seal.

There has been considerable disagreement concerning the best method to manage a hemothorax. Edwards and Davis state that 70 per cent of all chest wounds are thus complicated, so it is an important factor. In the past there has been a great tendency to leave the blood in the pleural cavity and allow it to absorb. This may be the best method in civil practice, where the damage is usually not so extensive, but even there the value of this regimen seems to be open to question. Weeks, of the New York police force, reports 76 cases of gunshot wounds of the chest which were treated without or with late aspiration with a 26 per cent mortality. In 17 persons who were treated with aspiration of the blood and replacement with air, there was no mortality. The disadvantages of leaving blood in the pleural cavity are: (1) An excellent bacterial medium is left in the pleural cavity, encouraging infection, and if infection does occur the empyema is very large; (2) the absorption of blood is very slow and the deposit of fibrin on the pleural surface often prevents reexpansion of the lung.

In England during the present conflict it has become the general routine to aspirate as much blood as possible about 24 hours after the injury (always before the fourth day). Fluid is removed as long as it can be obtained through a large bore needle. If

force is required, or if the patient complains of a pulling or tight sensation in his chest after a quantity of fluid has been removed, replace with some air. The use of a three way stopcock makes this easier and prevents the sucking of air into the chest as usually occurs when only a needle and syringe are used. Some authorities feel that air should always be replaced to prevent hemorrhage, but Roberts and Tubbs have found that they have no more recurrences of hemorrhage when air is not replaced, and in those cases where infection does occur, the empyema is much less extensive if air has not been replaced.

Blast injuries, as mentioned earlier, are due to the effect of the high pressure wave which is caused by the explosion of a bomb followed by a suction component. Patients suffering from blast commonly show no external sign of injury other than bloody fluid exuding from the nose and mouth. The patients are severely shocked, dyspneic, cyanotic, and usually complain of chest and abdominal pain. They are usually restless even after given 1-2 grain of morphine. Cough and hemoptysis are common. There is a limitation of motion of the chest and it seems to be held about three-fourths expanded. Attempts at deep inspiration are painful. Breath sounds are usually weak and many rales are heard. A few of these cases clear up, but in many intrapulmonary hemorrhage continues or pneumonia develops and death occurs.

Treatment consists of heat, morphine, oxygen and plasma transfusion. Operation is contraindicated unless absolutely necessary to correct some other condition. The patient should not be moved more than is imperative. Artificial respiration is absolutely contraindicated.

Traumatic asphyxia occurs as the result of direct crushing of the chest. It is characterized by deep bluish discoloration of the face, neck and upper chest. There is no specific therapy and most patients recover completely.

In penetrating wounds of the chest there are several indications for primary operation. They are: control of progressive hem-

orrhage, convert an open pneumothorax into a closed one and prevent sepsis. Most thoraco-abdominal wounds require exploration.

Probably the most urgent indication is the patient with an open pneumothorax or a "sucking wound." If the opening is small, air may enter the pleural cavity on inspiration but not get out on expiration and as a result a dangerous tension pneumothorax develops. If the wound is larger there is a free ingress and egress of air, the patient will be in a critical condition due to collapse of the lung, mediastinal swing, or paradoxical respiration. Unless the opening is closed promptly the patient will die. In an emergency, a thick pad, preferably covered with vaseline to make it air tight, should be strapped over or sewed into the wound to stop it up. If there is hemorrhage the vessels can be tied off, or both the closing of the wound and the plugging of the wound and a stopping of the bleeding may be brought about by putting a mushroom shaped dressing into the pleura and then close the wound by an outward pull. If no further exploration is thought necessary the necrotic tissue at the wound edge is debrided away and the wound is closed. If an airtight closure can be made without closing the skin, it is probably wise to do so, placing sulfanilamide in the wound and closing the wound by delayed primary suture at a later time.

If there is severe bleeding from the lung there is of course no question as to whether thoracotomy is indicated. However, for those inexperienced in the treatment of penetrating wounds it is difficult to decide which patients to operate on when the prevention of sepsis is the sole indication. Through and through wounds, when bony fragments or clothing have not been carried into the pleural cavity or lung, are unlikely to be followed by sepsis though Monod feels that exploration should be done more often than it is. While small fragments of shell may enter the chest in an intercostal space and cause little sepsis, it is probable that the dictum developed in the last war, "leave bullets alone, remove shell fragments," is a good one to follow.

If a thoracotomy is decided upon it may be done by enlarging the original wound, if it is in a position convenient for the exploration, or if not convenient a new opening may be made in an intercostal space or through the rib bed after the removal of several inches of a rib. The wound of entrance and the wound of exit, (if there is one) must be thoroughly debrided, or if early (a wound excision done) and any bone fragments removed.

After the thoracotomy opening has been made the ribs must be spread with a rib spreader. If the lung is wounded the various lobes are picked up separately and examined carefully. When the wounded portion is found it is brought out through the thoracotomy wound and the opening is packed shut around the exteriorized portion of the lung to prevent mediastinal swing. The tract of the missile is cleaned up and necrotic tissue trimmed away. Shell, rib and clothing fragments are removed. Bleeders or whistling bronchi are tied off. The pleura is sutured to prevent the escape of more air or fluid into the pleural cavity. If the damage to the lung is too extensive a lobectomy should be done, as the extensively damaged lung will probably undergo septic degeneration unless this is done.

If during the thoracotomy a rent is found in the diaphragm, this wound should be opened in a radial direction and the organs in the upper abdomen examined. If extensive damage is found, it may be necessary to do a laparotomy too. The diaphragm is then sutured.

Two new procedures are now being quite generally used and are proving to be very beneficial. One is poudrage of the pleural cavity with 10 to 15 grams of sulfanilamide before closing the wound. This is a convenient way of obtaining an early concentration of the drug as it is absorbed rapidly in the pleural cavity. A second is the introduction of a self retaining intercostal catheter to allow for the escape of air and effusion and obviates the necessity of post-operative pleural aspiration. This should be placed in the lower part of the chest, though not in the costophrenic angle as the

diaphragm may obstruct drainage. Roberts and Tubbs state that the tube should not be put through the thoracotomy wound or the wound produced by the missile, but through a separate intercostal opening. Moorhead, however, stated that in the cases at Pearl Harbor the wounds of penetration were sewed tightly around the tube. In a letter from Dr. Moorhead he stated that "our chest wounds did well, and our wounds of entrance around the tubes showed no additional evidence of infection by comparison with those elsewhere." The catheter is removed at the end of 48 hours and the wound closed with a single suture, which had been inserted at the time of operation. If infection of the pleural cavity does occur it is treated as any acute empyema in civil practice.

WOUNDS OF THE HEART AND PERICARDIUM

If there is a large wound of the heart the patient usually does not live to reach the doctor. If the wound is less extensive, however, it is compatible with life if the condition is recognized and handled properly. The patient with a heart wound is commonly shocked but he may walk into the hospital under his own power. Patients with heart wounds usually show evidence of a wound in the vicinity of the heart. Prompt diagnosis is essential. The veins of the neck are usually distended. This is due to the accumulation of blood in the pericardial cavity which prevents the diastolic filling of the heart. There is a falling arterial and rising venous pressure. Heart sounds are distant or absent. Fluoroscopy shows diminished or absent activity. Treatment should be aspiration or operation. If the pericardial aspiration gives some relief which is followed by a recurrence of symptoms, or if it gives no relief, operation should be done at once. An incision is made over the heart. Usually it is necessary to ligate the internal mammary vessels. The pericardium is found to be distended and blue. The pericardial sac is opened, the blood and clots removed, and when the wound is found, this is sutured. Care must be taken not to include a coronary vessel in the suture. The pericardial sac is closed

as is the chest wall. These patients usually require transfusion during and after the operation. A patient with a wound of the heart should be given the chance to live by being operated upon, even if when seen by the surgeon pulse and respiration have apparently stopped. I have seen such patients start breathing and the heart start with massage after the pericardial sac has been opened.

Wounds of the mediastinum are difficult to handle. If large vessels are severed death usually occurs before the patient reaches the doctor. Foreign bodies in the mediastinum should be left alone unless they are very large or cause trouble. Mediastinal emphysema may follow injury to the lung or bronchi. By pressure on the structures in the mediastinum this may cause dangerous symptoms. While this condition is difficult to control, it can sometimes be retarded by making an incision in the suprasternal notch to allow for the escape of air.

CONCLUSIONS

The extensive use of aerial warfare is making every doctor a potential military surgeon. Correctly to handle war wounds of the chest, the physiology of the chest and the forces that cause these wounds must be understood.

Shock, open pneumothorax, tension pneumothorax and hemothorax, and cardiac tamponade must be handled promptly if the lives are to be saved.

Some of the newer ideas in the treatment of these wounds are discussed.

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DISCUSSION

Dr. Frederick F. Boyce (New Orleans): The statistics which Dr. Harrison has presented concerning the frequency and the serious consequences of war wounds of the chest are evidence of the importance of their consideration at this special time. I am sorry that the limited time at his disposal did not permit him to discuss in detail all the complications which follow such wounds. The time at my own disposal is even more limited, and I shall therefore merely comment on one or two special types of wounds.

Colonel Yates, who was in charge of the American unit detailed in the last war to study the treatment of thoracic injuries, was an advocate of immediate open operation in the management of all but the most limited degree of hemothorax. His

views were in direct opposition to those of Morelli, who advocated aspiration and air replacement, on the ground that air is an irritant to serous membranes and that the first principle in the prevention as well as the treatment of pleuritis is the elimination of irritation. It is interesting to observe, in special articles and surveys in the recent British literature, that Morelli's method now seems to be the treatment of choice in severe injuries of this kind. In lesser degrees of tension pneumothorax the use of valvular trocars, which permit the egress of air but prevent its ingress, is reported to be as satisfactory as repeated aspiration.

Several rather ingenious methods have been developed for the treatment of sucking wounds. In the last war the Italians used a dumbbell shaped rubber bag which was inflated after its insertion into the wound and by which closure was thus effected. Tiegel devised a valve drainage plate which, when applied to the wound, served for drainage as well as effected closure and thus guarded against the development of hemothorax and tension pneumothorax.

When mediastinal emphysema develops, it would seem more logical, instead of making an incision in the suprasternal notch, which was formerly the custom, to attack the problem at its source. Aspiration of the pleural cavity or water-sealed drainage is the best plan when there is a tear or laceration of the pleura. Operative intervention, with closure of the defect, should be considered when injury to the bronchus is suspected.

The best treatment of chylothorax due to injury of the thoracic duct is the use of supportive measures, with aspiration to relieve cardiorespiratory embarrassment, since surgical repair is impractical. If the aspirated chyle is sterile, it could be re-introduced into the vein.

Finally, sulfonamide therapy should supplement whatever other methods of treatment are employed. In a recent study of war wounds of the chest, Roberts and Tubbs showed that following the prophylactic use of sulfanilamide and its derivatives there was a decrease in the incidence of infection, and, when infection did occur, a decrease in the severity of the toxemia which is always a grave phase of wounds of the chest.

Dr. Frank L. Loria (New Orleans): I think we should be grateful to Dr. Harrison for bringing this subject to our attention, since it is so timely. The time is at hand when every physician, irrespective of his specialty, should become more or less surgically minded. In our present national crisis one can never know when a tragic situation will occur needing his services, be he surgeon or internist.

My interest in chest injuries has come about because of the frequent association of injuries to this cavity with abdominal injuries. Two days ago I presented a paper, before this section, on abdomino-thoracic gunshot injuries, reviewing statistically the cases admitted to the New Orleans Charity Hospital for 15 years prior to 1942.

Chest injuries require a consideration of four important factors: (1) hemothorax; (2) hemothorax; (3) open or suction pneumothorax; (4) valvular or tension pneumothorax. Any of these factors may be sufficiently severe to cause death; and most deaths from chest injuries, aside from those caused by injury to the heart or other important mediastinal structures, usually are the result of one or more of the above mentioned factors.

Hemothorax rarely results from injury to the lung alone. The systolic blood pressure in the pulmonary circulation is only about 20 mm. of mercury, just about one-sixth of what it is in the general circulation. In addition the lungs are credited with certain hemostatic properties. Thus any pulmonary hemorrhage is usually not of long duration nor very great. Hemothorax usually results from injury to the intercostal or the internal mammary vessels. The presence of a large hemothorax should therefore direct the surgeon's attention to these structures.

As the time limit for this discussion is rather brief I shall have to pass over the three other important complications of these injuries, particularly since I wish to present certain figures in connection with a study of chest injuries I am now making on those cases admitted to the New Orleans Charity Hospital over a period of 15 years prior to 1942. During this period 304 cases of penetrating gunshot wounds of the chest were admitted to this institution with 106 deaths, giving a mortality rate of 34.83 per cent. In this same period of time among 628 cases of penetrating stab wounds of the chest there were 73 deaths, giving a mortality rate of 11.6 per cent. The great difference in the mortality among these cases, caused by different weapons, is no doubt the result of the more frequent occurrences of the above named important complications in gunshot injuries over stab wounds of the chest.

Dr. Isidore Cohn (New Orleans): We have with us five representatives of the government hospital here in New Orleans. I am wondering if Colonel Woldenberg of LaGarde Hospital would have a few words to say.

Lt. Col. S. C. Woldenberg (New Orleans): I am rather astonished to be asked to say something. First of all I came in to the meeting late and I am sorry I missed some of Dr. Harrison's paper.

In the closing part of the paper Dr. Harrison indicated that he still reduces fractures of the rib. At LaGarde Hospital we have not received any actual war casualties yet. We have a lot of other problems of chest cases confronting us in the surgical department. Empyemas, for instance, following pneumonias, encapsulated abscesses and cysts, which are similar to the cases seen in civilian practice. When receiving a chest injury case, we are not immediately confronted with the necessity of reducing the fractures of the rib. The primary importance, if the patient is in shock, is to stop

the hemorrhage and give him supportive measures, transfusions, infusions, stimulation, or whatever may be needed. In general, we are primarily confronted with whatever emergency measures are necessary to save the patient's life. Afterwards, when the patient has sufficiently recovered, we then start on a definite course of treatment for the specific injury.

Dr. Harlan W. Harrison (in closing): In regard to Colonel Woldenberg's statement about fractures, I am afraid I did not make this point clear. I meant reduction of the fractured rib should only be carried out when there is that fracture of the rib which is penetrating into the lung or causing severe intracostal bleeding.

In regard to the hemothorax, that is probably one of the most common conditions in treatment of chest injuries. I think the work of Weeks of the New York police force is interesting in which he reported 76 cases of gunshot wounds of the chest were treated with late or no aspiration, with a mortality of 26 per cent; subsequently he started aspiration on all hemothorax cases early, within 24 or 48 hours and in a series of 17 cases there was no mortality.

I am sorry I could not completely cover the subject as I had planned. In closing I shall emphasize control of hemorrhage, control of shock and in an emergency close up any sucking wounds which cause definite disruption of the normal physiology.

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SURGICAL TREATMENT OF PELVIC THROMBOPHLEBITIS*

LIGATION OF INFERIOR VENA CAVA AND OVARIAN VEINS

A PRELIMINARY REPORT

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AND

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NEW ORLEANS

The high mortality associated with pelvic thrombophlebitis, the relative inefficiency of chemotherapy and other conservative methods in this condition and the poor results obtained by ligation of the ovarian veins alone prompted the authors to adopt a more radical type of operative procedure, in an attempt to better previous results.

A study of a series of cases of pelvic thrombophlebitis in the female¹ found at autopsy or operation show that this condition is not infrequently found in postpartal and postabortal sepsis. Occasionally it follows pelvic surgery, cervical stricture, or the application of radium. Metastatic emboli are common and patients who do survive under a conservative regimen survive only after a prolonged convalescence.

In this communication, we wish to present three cases of pelvic thrombophlebitis that have recently come under our observation. All three were treated by ligation of the ovarian veins and the inferior vena cava.

CASE No. 1

M. N., a 22 year old colored primipara, delivered by low forceps and episiotomy a 7 pound, 6½ ounce viable male baby from L. O. T. position after a 17 hour, 40 minute, fairly difficult labor, on February 5, 1942. She had a non-morbid course until seventh postpartal day when the temperature then rose to 101°. The next day, February 13, there was a chill with increased temperature to 104.4°.

Vaginal examination on February 14: Lochia, not foul; episiotomy, well healed; cervix closed with a healing laceration which extended to right fornix; slight parametrial tenderness. The uterus was not tender, and well involuted; adnexae were negative. Chest, essentially negative, clinically. Urinalysis, 10 pus cells per high powered field; residual urine 10 c. c. Blood transfusion 200 c. c.

On February 15 she had a chill and temperature was 104°. Blood: hemoglobin, 60 per cent, white blood cells 19,600, polys 86 per cent. Urinalysis, negative. Blood culture taken (reported negative on February 20). Sedimentation rate, 20 minutes.

Chest clinically negative. X-ray: "Bronchopneumonic infiltration in lower two-thirds of the right lung with multiple small cavities present; the process could be due to pneumonia, with abscesses, local tuberculosis or multiple septic infarcts, which are microscopic in the left lung."

Recto-vaginal examination: Definite tender thrombi in both broad ligaments about level of uterine plexus. Diagnosis: Pelvic thrombophlebitis.

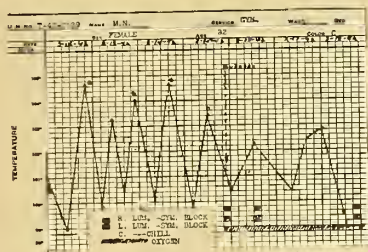
Operation: Under 20 mgm. procaine spinal anesthesia, ligation of right ovarian vessels one to two inches from their junction with the vena cava and resection of vessels with right tube and ovary. Ligation of inferior vena cava one inch proximal to junction of common iliac veins and ligation of left ovarian vessels above pelvic brim.

Pathology found at operation: (1) Thrombi at hilum of right ovary; (2) thickening of uterine veins; (3) thrombosis in right iliac vein.

*Read before the Orleans Parish Medical Society, May 11, 1942.

†From the Department of Obstetrics and Gynecology, Tulane University and the Tulane Unit, Charity Hospital, New Orleans, Louisiana.

The patient's postoperative course and the therapy administered postoperatively are indicated in Chart 1.



X-ray examination of chest postoperatively showed the following: February 18: "Infiltration of both lungs more marked on right, with what appears to be multiple small cavities on the right side. There is elevation of the left leaf of the diaphragm and disc-like atelectasis." February 24: "Slight clearing of the infiltration in the right hemothorax." March 1: "Clearing of right lung field since last examination. The left leaf of the diaphragm is still elevated. There is also clearing of the left lung field." March 19: "Complete clearing of the infiltration in both lungs, there is still elevation of the left leaf of the diaphragm."

This patient has recovered completely and remained well to date.

CASE No. 2

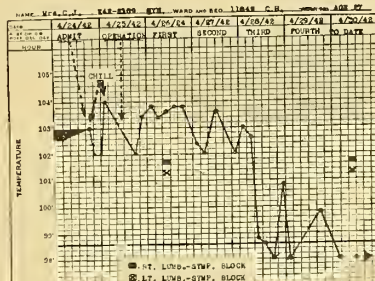
Mrs. C. J., aged 27, had chills, fever and vaginal bleeding. L. M. P. February 25, 1942, for 5 days. P. M. P. January 24, 1942, for 5 days. In March she took large doses of quinine, and again on April 2, 1942, but did not bleed. On the afternoon of April 17, 1942, she fell and injured herself, and at 2:30 p. m. April 18, 1942, she had a light chill and fever. Since that time, she has had many chills during which time her teeth would chatter and she would shake the entire bed. Following these chills, she would have an elevation of temperature to 105° by thermometer. Chills have continued to become increasingly worse until the day before admission, when she began to pass blood. She has suffered with nausea but has not vomited. She denies an attempted criminal abortion.

She had rheumatic fever as a child; no edema of ankles; dyspneic at times; no precordial pain; cough for eight months; no hemoptysis. Gastrointestinal history negative. She had slight dysuria, but no hematuria.

Physical examination: B. P. 108/72. Head: Negative. Mouth dry, membranes pale. Neck: Negative. Chest: Heart not enlarged; no thrills; systolic murmur at pulmonic area and aortic area; diastolic murmur at mitral area. Abdomen: Negative. Genitalia: Multiparous, relaxed perineum, cervix blue, soft, lacerated, necrotic, and dilated 1 cm. There is a purulent material coming from the cervix. Bimanual examination showed the presence of thrombotic veins in the right parametrium.

Diagnosis: Septic abortion, rheumatic heart disease, pelvic thrombophlebitis. X-ray April 24: "No evidence of pneumonia."

Operation on April 25: Novocain spinal 200 mg. Procedure: Ligation of right and left ovarian arteries and vein. Ligation of inferior vena cava at lower level of fourth lumbar vertebra. Operative finding: Thrombophlebitis of both uterine veins.



This patient's postoperative course and therapy administered are indicated in Chart 2. She has remained well to date and at present the pregnancy is following a normal course.

CASE No. 3

Mrs. C. J., aged 67, had a vaginal hysterectomy, anterior and posterior colporrhaphy three weeks ago, followed by an uneventful recovery. She was ambulatory on third day following operation. Discharged symptomless, but running a low grade fever.

Readmitted March 24, 1942, 11 days later, with history of having fever and having contracted a "cold." Pain in left flank for several days, but not present on admittance. Patient states she had chills and fever to 103° while at home, and dysuria several days. All these symptoms subsided and temperature was normal on admission.

For three days after admission this patient was perfectly well and afebrile. Urinalysis 1-2 pus cells per high powered field; residual urine 20 c. c. on March 25. Residual urine March 26, 6 c. c. At this period we began to doubt her history; however, on the night of the third day in the hospital she had a chill and elevation of temperature to 104°.

On March 26, p. m., urinalysis was negative. On March 27, urinalysis was negative; blood culture was negative; x-ray of chest was negative; sputum was negative; blood count: red blood cells 3,940,000, white blood cells 7,850, polys 75 per cent. At this time a diagnosis of pyelonephritis, bronchopneumonia, and possible thrombophlebitis was entertained. X-ray and urinalysis and clinical aspects ruled out. Later in day there was noticed some tenderness of thighs. A malaria smear was negative. Sulfathiazole was increased to full therapeutic doses.

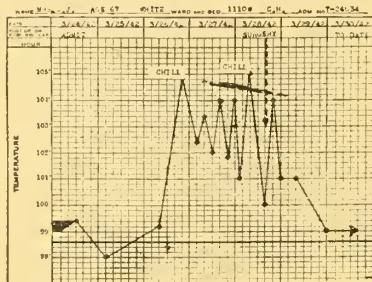
On March 28 she had another chill and increased temperature to 105°. A diagnosis of pelvic throm-

bophlebitis was more apparent and venous ligation was decided upon. G. U. consultation and cystoscopic done. Smear and culture from bladder, left and right kidney was negative.

Portable x-ray: "Infiltration in both lungs, more marked on the right; this could be due to pneumonia or to small infarcts." White blood cells 7,800.

Operation on March 28: Local infiltration 1 per cent procaine. Procedure: Ligation of vena cava at level of fourth lumbar vertebra.

The patient has recovered completely. Her postoperative course is shown on Chart 3.



DISCUSSION

Three cases of thrombophlebitis of the pelvic veins treated by ligation of the ovarian veins and the inferior vena cava are presented: One case was postpartal, one followed an attempted criminal abortion, and another followed a vaginal hysterectomy. All cases have fully recovered and at present do not show any ill effects from vena cava ligation. True, the venous pressure in the lower extremities of all three is elevated at present but there is no edema. The venous pressure has shown a decrease in all cases as the time interval from date of operation increases. This leads us to believe that in the near future the venous pressure will return to, or vary little from the normal. Dr. George Burch, of the Department of Medicine, Tulane University, is studying the circulatory system in these cases at regular intervals and will publish a separate report on his findings at a later date. It is exceedingly interesting that one patient (case 3) is 67 years of age and another (case 2) had rheumatic heart disease, and no ill effects have been observed following ligation of the inferior vena cava.

All cases of vena cava ligation should have bilateral lumbar sympathetic blocks

following the operation. This enhances the development of collaterals and relieves any edema that might be found postoperatively. Occasionally a patient will feel faint and anxious while the block is being administered. Should this be the case, the procedure should be discontinued immediately and attempted again in 48 hours. In the cases presented there is no visible edema at present, no matter how long the patient remains ambulatory. In all cases the pulmonary complications have cleared completely and no one has shown any recurrence of fever.

In none of these cases was chemotherapy administered postoperatively and therefore any improvement in the patient's condition cannot be attributed to this mode of therapy.

The preoperative diagnosis is occasionally extremely difficult to determine with certainty. In these three cases the preoperative diagnosis was made by the senior residents, corroborated by the senior author. Operation was performed by Drs. Jones and Collins in case 1, Drs. Warren and Collins in case 2, and Drs. Thomas and Holmes in case 3.

CONCLUSIONS

1. The possibility of thrombophlebitis of the pelvic veins must be considered in postabortal or postoperative cases showing septic temperature associated with chills. X-ray examination of the chest in all cases is imperative as emboli and infarction may be present without clinical symptoms.

2. Careful examination of the urinary tract, including cystoscopy, should be performed in order to eliminate this system as the causal agent in the production of the septic curve and chills. This procedure was followed in all of our cases.

3. Should patients with septic temperature and chills fail to respond to chemotherapy, then surgical therapy should be instituted.

4. Thrombophlebitis and phlebothrombosis of the veins of the lower extremities should be searched for. Phlebograms are of definite value in proving or disproving the presence of these conditions.

5. The surgical procedure should consist of:

a. Ligation of ovarian veins and hypogastric veins if thrombi are found in the ovarian veins and not the uterine, hypogastric or iliac veins.

b. Ligation of ovarian veins and inferior vena cava if thrombi are found in the ovarian veins and in the uterine, hypogastric or iliac veins.

c. Ligation of the ovarian veins and inferior vena cava if no thrombi are found in the ovarian veins but are found in the uterine, hypogastric or iliac veins.

In this manner the normal venous channels from the uterus are ligated.

6. The finding of thrombosed pelvic veins on vaginal examination is a distinct aid in diagnosis. However, failure to find them by palpation does not mean that thrombophlebitis of the pelvic veins does not exist.

REFERENCE

1. Nelson, E. W., Jones, J. R., and Collins, C. G.: *Pelvic thrombophlebitis: A study of the etiological factors from a statistical standpoint*, New Orleans M. & S. J. (in press).

DISCUSSION

Dr. G. E. Burch (New Orleans): We have been conducting studies of circulation in these patients. It is not surprising that these patients do not develop edema. It is practically impossible to produce edema of the legs of dogs by ligation of the vena cava. Three years ago Dr. DeBailey and I studied the influence of sympathetics in phlebitis. All animals were found to develop a marked increase in venous pressure distal to a ligated femoral vein. There was a simultaneous extensive drop in the volume of pulsation of the small peripheral vessels. The non-involved vessels pulsed normally. This is very much like observations found in the finger tip when the upper extremity is elevated or lowered; in the former position there is great increase of volume pulsation of the peripheral blood vessels and in the latter position there is a decrease in pulsations. In the patients in whom Dr. Collins ligated the inferior vena cava, it was found that the venous pressure increased quite markedly in the lower extremities. In some of these patients, followed over a period of three weeks, it was found that there was gradual reduction in this venous pressure. In no instances did pressure return to normal. As Dr. Collins said, it will take many weeks probably for that to happen. As found in dogs, there was quite a marked decrease in pulsations of the peripheral blood vessels in the toes while those in the fingers were normal.

One wonders why ligation of the inferior vena cava is so beneficial. One might conjecture an explanation. When infection begins in tissue, there is first an accumulation of antibodies at the site of infection, so as to destroy the offending organism. A limiting wall is also built to prevent spreading. If infection occurs in a vein there is continual washing away of cellular and humoral immune bodies, so that a sufficient concentration cannot accumulate to overcome this infection and to isolate it locally. With ligation of the veins the circulation is slowed or stopped, so that it is possible for these antibodies to accumulate in sufficient quantities to isolate and overcome the infection.

Dr. Curtis Tyrone (New Orleans): This presentation represents an epoch in the treatment of this type of pelvic infection. Dr. Collins and his associates are to be commended for their study and ingenuity in carrying out this operation and should be congratulated on the results obtained. I can remember the time when any form of venous ligation for this type of pelvic infection was considered radical and we approached with a great deal of fear and in many patients in whom it was tried it was a failure. In the light of Dr. Collins' work here, probably the reason for failure was that we did not go far enough and ligate the veins more extensively as he has done.

Dr. Nelson's presentation certainly presents an interesting statistical study. I think he has gone into it very thoroughly and one thing pointed out here is that when there is thrombophlebitis, which develops postoperatively, and pelvic infection, it usually is in some case where operation has been done on the cervix or an upper vaginal hysterectomy has been done.

Another interesting conclusion these statistics brought out is that the mortality, which we know is 100 per cent in pelvic thrombophlebitis without operation, has been reduced to 12 per cent.

Dr. E. L. King: This carries us back to the work of Dr. Jeff Miller. In 1912 at the A. M. A. Dr. Miller reported all he could find in the literature to that date regarding this operation for pelvic thrombophlebitis. At times he waxed enthusiastic and at times he did not. In those days we waited too long in many cases to establish diagnosis and waited still longer, hoping that whatever conservative method of treatment was employed would accomplish results. Finally in desperation the operation was performed and it would be unsuccessful. However, I did see him accomplish very wonderful results in private cases mostly referred, ligating not the vena cava but one or the other of the iliacs, depending on the involvement. On one occasion the ureter happened to be wounded and the kidney had to come out. The patient was saved by the operation.

One thing which should be brought out is that blood cultures in these cases are not satisfactory.

I believe that is due to several factors. One is time that the culture is taken. We learned years ago that the best time to take culture is at or after chill. It is not always easy to get the technician to come immediately at the time of chill. Another thing is that not enough cultures were made anaerobically; a great many infections are due to anaerobic organisms.

Dr. Collins mentioned that we can not often feel these veins. This is put down¹ as a classical method of diagnosis. He mentioned only one case in which they were felt; only once in a great while can they be found. Diagnosis has to be based on the clinical picture—chills, up and down temperature and history of gynecologic or obstetrical operation or manipulation. Early diagnosis is important, based on the clinical picture. We must not get too enthusiastic and should not ligate every vena cava in everyone with fever after pelvic operations or delivery. At the same time it has been shown conclusively that it can be done without killing the patient; collateral circulation is established and the patient will usually get well.

Dr. Miller used to feel that by tying off the vein you jugulated the infection; that the bacteria did not go through the vein wall but there was steady crumbling of the thrombi. The thrombus in the vein would break down and produce a showering of emboli throughout the body. By ligating the vein above the thrombus it was jugulated and tied up and there was no more shower and then the antibodies would work and kill off the bacteria.

It is certainly of great interest that so many of the patients have been cured. So far this treatment is the only thing we have found of real value for these cases of thrombophlebitis.

Dr. B. B. Weinstein (New Orleans): I think Drs. Collins, Nelson and their associates are to be commended on the excellent work they have done, and on the fine presentations they have given us. One more greatly appreciates the value of their report when we realize that this procedure, looked upon by many as radical, proves to be not only life saving, but conservative with a 12 per cent gross mortality and a corrected mortality of zero in Collins' series. I am interested in the fact that the ligation of the vena cava is relatively so safe, and so little peripheral edema is evident postoperatively. I think one of the explanations of this finding is the very rich venous collaterals set up after ligation of the inferior vena cava. These collaterals can be divided largely into three groups: (1) superficial, composed of collaterals set up via the superficial epigastric, and superficial circumflex iliac veins, which thus connect the saphenous flow from the lower extremities with the superficial thoracic and superficial upper abdominal wall venous drainage; (2) deep, composed of collaterals set up via the anastomoses of the deep (inferior) epigastric and deep circumflex iliac veins with the

superior epigastric and lumbar veins, thus connecting the external iliac veins with the internal mammary veins and the ascending lumbar trunk and finally (3) the ascending lumbar trunks which form a most important part of the venous collaterals after ligation of the vena cava. These trunks begin on either side of the sacral promontory where they communicate with the middle and lateral sacral veins, common iliac hypogastric and ilio lumbar veins via the anterior sacral plexus. They ascend in front of the transverse processes of the lumbar vertebrae and communicate with the lumbar veins, the vena cava inferior and the right renal vein. The right trunk continues as the azygos vein to enter into the superior vena, the left continues as the hemazygos which ultimately drains into the azygos vein.

Dr. M. E. DeBaKey (New Orleans): Dr. Collins and his associates deserve special commendation for their zeal and determination in attacking such a serious problem and their courage in directing attention again to the value of a procedure which on first thought may seem radical but upon more sober consideration has a definitive rationale. Before performing his first case Dr. Collins discussed with me the possibility of vena caval ligation and at that time it was recalled that the procedure had been successfully performed a number of years ago and was apparently indicated in the particular case under discussion.

Proximal ligation in venous thrombosis has an interesting historical development. Perhaps the earliest realization of the rationale of this procedure was by Hunter, who, in 1784, successfully applied it clinically. However, Hunter apparently did not actually perform venous ligation but attempted to accomplish the same purpose by placing compression "upon that part of the vein just above the suppuration." Possibly Lee, in 1865, was one of the earliest actually to ligate a vein above the thrombophlebitic process. About 25 years later Kraussold recorded the successful ligation of the femoral vein in a patient with suppurative thrombophlebitis following thigh amputation and Zaufal reported the successful ligation of the internal jugular vein in the treatment of pyemia originating in the internal ear. It would seem that the earliest surgeon to apply the method in gynecology was Freund, who, in 1898, performed ligation and excision of the thrombosed ovarian vein and broad ligament in two cases but the procedures were unsuccessful. Perhaps Trendelenburg, in 1902, was the first to perform the procedure successfully in a case of puerperal infection. At the first operation he ligated the hypogastric vein but because the patient continued to have chills he performed a second operation and ligated the ovarians. It is interesting to observe that at that time Trendelenburg expressed the opinion that vena caval ligation should not be considered because if thrombosis was that extensive the procedure would not be successful. Nine years later, Trendelenburg had

apparently changed his mind as he reported probably the first successful case of vena caval ligation. Since then the procedure has been performed by a number of surgeons. In 1937, Krotoski collected 48 cases and stated that there was no evidence of subsequent circulatory disturbances in the lower extremities. Krotoski also directed attention to the suggestion of Schroeder and Klauberg that because of the frequent difficulty of finding a thrombus, the vena cava and the ovarian veins should be ligated in all cases.

Apparently proximal venous ligation in gynecologic cases received greatest enthusiasm about 20 to 25 years ago. The procedure was very popular in Germany and there was heated discussion and much controversy concerning the respective values of the transperitoneal and extraperitoneal approaches and whether the operation should be done after the first or the third chill. In this country Dr. C. Jeff Miller's exhaustive consideration of the subject will be recalled by many in the audience. Gradually the pendulum swung toward conservatism and the operation began to be considered dangerous and of little or no value. This was due to the appallingly high mortality and the poor results observed by numerous surgeons. In his critical analysis of the subject Krotoski justifiably directs attention to a number of factors which may have accounted for these results, the most important being that the operation was frequently performed too late, by inexperienced surgeons, and not sufficiently extensive. It is gratifying to see the recent revival of interest in this procedure which undoubtedly has a definitive place in the management of these cases.

The only other thing on which I wish to comment is the value of phlebography. While it is undoubtedly significant in the type of cases described by Dr. Collins, it is of even greater importance in certain forms of phlebothrombosis in which the condition is suspected but not clinically demonstrable. Such a case was recently observed. The patient was first treated for pneumonia and suspected of having heart disease. Subsequently the latter was excluded and it was realized that the patient was suffering with pulmonary infarcts and phlebothrombosis was suspected although there was no other clinical evidence of the condition. Dr. Ochsner, who was called in consultation, performed phlebograms in both lower extremities and these demonstrated clearly the presence of normal venous channels in one extremity and venous thrombosis in the other. Following proximal venous ligation in the latter the patient's temperature dropped to normal and a rapid recovery ensued.

Dr. Edward Nelson (In closing): An important fact was brought out by Dr. DeBakey, namely, that in many of our cases it would have been possible to make a different diagnosis, preoperatively. This is easily explained. The postpartal cases frequently have complicated deliveries,

often followed by urinary retention. This predisposes to pyuria, and often the fever is carelessly blamed on urinary tract infection. In our cases, we found it necessary to subject the patients to cystoscopic examination, in order to rule out the urinary tract as the source of fever.

Pulmonary infarction, on the other hand, is too often confused with pneumonia. In reviewing the records, it was found that in all but a few instances, a clinical diagnosis of pneumonia was made, and the patients did not have the benefit of an x-ray examination. Since we started this work, the Department of Radiology has concentrated more on the diagnosis of pulmonary infarction. Since the lesions are so often atypical, studies are now being conducted to compare them, and determine the frequency of the different types.

The remark made, that it takes courage to operate on these patients, is certainly true. The diagnosis is often not definite, but the patients must be given the benefit of the doubt, especially when they are not responding to a conservative regimen, and an exploration of the pelvic veins conducted.

Dr. Conrad Collins (in closing): Ligation of the vena cava was not attempted until I talked over the possibilities and possible complications with Drs. Gage, DeBakey, Ochsner and Rives.

I wish to give credit to the resident staff on the Tulane Unit, Charity Hospital division of gynecology and obstetrics for their early diagnosis in these cases.

In regard to presence or absence of thrombi, in one patient on whom Dr. Rives and I operated, at the first operation we found thrombi in the ovarian veins and they were ligated and segments were removed. The patient was well for a week and then had more chills and fever. At the second operation, performed three weeks later, we were unable to demonstrate any other thrombi in the ovarians above the ligature or in the iliacs, hypogastrics or uterine veins, but the vena was ligated anyhow. The patient recovered completely.

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THE USE OF THE DARKFIELD MICROSCOPE FOR DIAGNOSIS OF GENERALIZED SECONDARY LESIONS OF SYPHILIS

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NEW ORLEANS

Of course, the use of the darkfield apparatus for identification of the *Treponema pallidum* in primary lesions of syphilis, genital or otherwise, and in moist papules, particularly about the genitalia, is generally recognized as good diagnostic procedure. The presence of syphilis organisms in other types of skin lesions might be generally ad-

mitted by many individuals who would not stop to consider the advisability of searching for the organisms.

Vryonis and Morgan¹, in 1939, made a study of the numerical relationship of *Spirochaeta pallida* in the various types of early syphilitic lesions. In this article they placed the lesions of syphilis in the number of organisms in the following order:

Average No. Spirochetes
per cu. mm.

- | | |
|--------------------------|--------|
| 1. Condyloma | 37,620 |
| 2. Mucous patch | 24,700 |
| 3. Chancre | 14,700 |
| 4. Dry secondary lesions | 1,800 |

The dry secondary lesions ranged from 370 to 3,200 in the number of spirochetes per cubic millimeter.

Naturally the use of the darkfield microscope in secondary syphilis is not absolutely necessary in order to diagnose the disease as syphilis, for in this stage of the ailment the serologic tests are almost universally positive. But if one wishes to say with absolute certainty that he is dealing with secondary syphilis, it would seem that he should attempt to use the darkfield for proving the lesions. The presence of positive serologic tests and the presence of skin lesions suspected of being syphilis do

not necessarily prove the case for secondaries. Furthermore, the beginning of treatment can be expedited by obtaining a positive darkfield report instead of waiting for a positive serologic report.

The following cases, eight of which were seen in the New Orleans Health Department Clinic and two in the Tulane Clinic at Charity Hospital, illustrate the practical use of darkfield apparatus in either dry or closed secondary lesions:

CASE REPORTS

No. 1. B. K., a colored male, aged 23, was an itinerant stable boy. This patient was seen with condylomata of the anus, scrotum and intertriginous regions of the thighs. He had annular lesions also, of the face and neck. Darkfield examinations of material were done as follows:

Condyloma of thigh.....positive
Condyloma of scrotum.....positive
Annular lesion of neck.....positive

The patient began treatment on the day of examination. The serology proved to be positive.

No. 2. A. Mc., a white female, aged 31, was named by the military as a contact and probable source of a case of primary syphilis. On the day that she was examined it was noted that she had a generalized maculo-papular rash, allegedly of one week's duration. There was some desquamation. A questionable mucous patch of the mouth was noted. One of the largest scaling lesions of the neck was selected for darkfield examination. The top was scraped away and from the serum beneath a positive darkfield was obtained. The blood proved to be positive. The patient began treatment on the day of the examination. Incidentally the darkfield examination of the mouth lesion was negative.

No. 3. B. M. F., a white female, aged 21, had been named by the military as a contact of a case of gonorrhea. When she appeared for examination she had a mucoid vaginal discharge and a maculo-papular rash of the abdomen, arms, legs and chest. A fairly large closed papule of the abdomen was chosen for a darkfield examination. The top was scraped away and from the serum beneath a positive darkfield was obtained. The blood proved to be positive. The patient began treatment on the day of examination. Her common-law husband came in for examination three days later and at the various other times as shown below with negative results as follows:

February 23, 1942—Negative examination, negative blood.

March 3, 1942—Negative examination, negative blood.

March 18, 1942—Negative examination, negative blood.

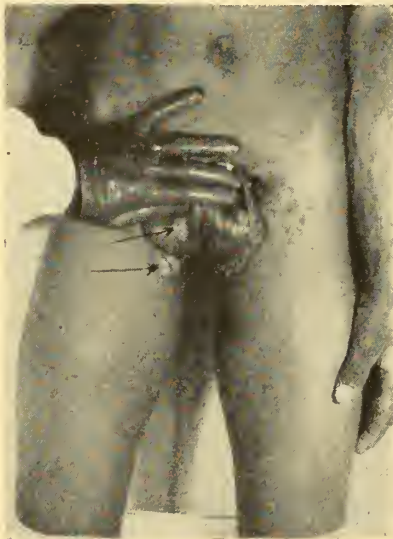


Fig. 1 (case 1). Shows condylomata of thigh and scrotum, both of which were positive for *Treponema pallidum*.

On April 11 he was again examined. At this time he was found to have a penile lesion of three days' duration. Darkfield examination of the lesion was positive; the serologic test was negative. He began treatment that day.



Fig. 2 (case 1). Shows annular lesions of the neck, one of which was positive for *Treponema pallidum*.

No. 4. O. O., a colored male, aged 30, came to us with a history of having had a rash for the past month. He had an old granulating mass of the pubic region which allegedly had been present for two months. There were about twenty papules of the chin, varying in size from two to four mm. in diameter, some of which were umbilicated. The top was removed from the largest lesion of the chin and the serum was examined by darkfield. It was positive, (loaded). The serologic test was positive. Treatment was begun on the day of the dark-field examination.

No. 5. A. R., a white male, aged 57, was referred to us on June 20, 1942 because he had a penile lesion, a rash, and a positive serologic test. We saw him on June 24, 1942, at which time he had a large dirty crusted lesion of the penis, involving much of the glans and coronal sulcus. An attempt at darkfield examination was not made on the penile lesion. It had been present two months, according to the history. There were scattered papules of the face, abdomen, arms and legs. A fairly tense shiny papule of the arm was chosen for darkfield examination. The surface was abraded and the exuding serum examined. It was positive for *Treponema pallidum*. In this case we might have been hesitant about making a diagnosis of secondary syphilis without benefit of a positive darkfield. We would have considered that at the age of 57 the man must have had many opportuni-

ties to have positive serology from previous escapes.

No. 6. M. C., a colored female, aged 20, had been hospitalized on May 23, 1942, for a rash of six days' duration, with coryza, and other symptoms of measles. She was suspected of having bronchopneumonia, and a drug rash as well, since she had had sulfathiazole. Her serology was positive, and a diagnosis of secondary syphilis was made. Allegedly she had had a sore of the genitalia three weeks before going to the hospital. The patient was referred to us June 6, 1942, at which time she had a generalized scaling papular rash. The darkfield examination of a large papule of the dorsum of the foot was positive, proving that she actually did have secondary syphilis. Her serology was again positive.

No. 7. Mrs. O. E., a white female, aged 25, had been seen in the dermatology clinic with a diagnosis of pityriasis rosea. Serology was positive and she was referred for treatment. At the time of referral she had an insignificant rash of the chest, consisting of a few scattered papules. The patient insisted that it was a different eruption from the pityriasis she had had at first. A closed papule over the sternum was chosen for darkfield examination. The top was abraded and the pulp from beneath, mixed with a tiny drop of normal saline, was examined by darkfield. It was positive for *Treponema pallidum*.

No. 8. Mrs. E. A., a white female, aged 55, was found to have a positive serologic test in the Dermatology Clinic. When she was referred for treatment she was found to have a thick papular erup-



Fig. 3 (case 2). Shows maculo-papular lesions of the neck, one of which was positive for *Treponema pallidum*. (Lesion used for darkfield has a circle made around it with pencil, which unfortunately resembles an annular lesion.)

tion of the palms, soles, and flexor surfaces of the forearms. There were a few scattered papules of the abdomen. The top of a papule of the abdomen was abraded and the pulp and serum from beneath, mixed with normal saline, was examined and found to be positive. A firm closed papule of the palm was split and the serum expressed as well as possible. A small amount of material collected on the point of a scalpel was mixed with normal saline and examined by darkfield. It, too, was positive.

No. 9. B. C., a white male, aged 21, was referred with a tentative diagnosis of secondary syphilis. He had seven discrete non-inflammatory lesions of the shaft of the penis, resembling comedones or sebaceous cysts. They were 3 to 4 mm. across and appeared to be almost healed, since there were small scaling areas in the centers. He had an indistinct macular rash of the trunk. There were also a few scattered papules of the trunk and arms. A firm closed papule of the upper right abdominal quadrant was chosen for darkfield examination. The surface was abraded and examination of the exuding serum was done; it was positive. The serologic test proved to be positive.

No. 10. L. W., a colored female, aged 21, was solicited as a marital contact of a patient with secondary syphilis. When she was first seen she had a fissure between the vagina and anus, with a few confluent moist papules about it. There was a scattered papular eruption of the arms and shoulders. Darkfield examinations were as follows:

Date	Source	Number	Result
9-14-42	Vulva	1	Negative
9-15-42	Vulva	4	Negative
9-15-42	Vulva	1	Positive (few seen)
9-15-42	Arm	1	Positive (numerous)

Treatment was begun September 15, 1942.

METHOD

The surface must be abraded vigorously by means of a scalpel or dry gauze. If serum does not exude freely it is necessary to squeeze the area in order to express sufficient material. The treponemes seem not quite as active as those from open lesions, perhaps due to pressure exerted.

SUMMARY

Darkfield examination of either dry or closed secondary lesions of syphilis is a practical procedure, as indicated by the enumeration of the above cases.

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1. Vryonis, G., and Morgan, J. H.: Spiraehaete counts in fluid from surface lesions of early human syphilis, *Ven. Dis. Inform.*, 20:343, 1939.

MUMPS

THE RELATIONSHIP BETWEEN SUBMAXIL-LARY GLAND INVOLVEMENT AND THE INCIDENCE OF ORCHITIS*

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ARCADIA, LA.

AND

HAROLD H. GOLZ, Captain, M. C.

FORT OGLETHORPE, GA.

Mumps is generally regarded as a disease of childhood. Permanent immunity usually results from a single attack, but many practitioners cite examples of second attacks. Mumps can occur at any age, and at any time of the year. Wesselhoeft¹ finds that approximately nine-tenths of city inhabitants above the age of 16 have had mumps, but the percentage in rural communities is much smaller.

IMPORTANCE OF MUMPS DURING WARTIME

The extreme susceptibility of the recruit for contagious disease in general is brought out by Wheelis² who showed that by far the highest rates occur during the first two months of service, and that this holds true for all seasons, though less marked in summer than in winter. From a public health and military standpoint, mumps has far more importance than is generally believed. In World War I, one out of every 20 white men, and one out of every six negroes had an attack of this disease. At Camp Wheeler³ 32 per cent of the soldiers at one time or another during their stay at the camp had mumps. Haven Emerson⁴ states that measured by the number of days lost from military service on account of sickness, mumps was the most important disease in the AEF. According to Parran⁵ mumps is, next to venereal disease, the most disabling of the acute infections among the recruits. Because of its frequent epidemic proportions, the high rate of hospitalization in the army, and the complications in adults, mumps ranks with many of the more formidable diseases, despite its low mortality.⁶

NATURE OF MUMPS

That the infectious agent of mumps is a filterable virus was established by Johnson

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and Goodpasture⁷ in 1934. Today mumps is looked upon by some as a systemic disease, whereas it has usually been considered a local disease of the salivary glands with occasional involvement of other organs "by metastases." Wesselhoeft¹ believes that Philibert's thesis has stimulated the idea that mumps is to be looked upon as a systemic disease with a variety of manifestations rather than a local disease with complications. Greene and Heeren⁸ found 43 nonsalivary manifestations in a study of 100 cases. In a vast majority of cases, the parotid glands are affected; bilaterally in about 70 per cent. Submaxillary glands are frequently involved; the sublinguals occasionally.

ORCHITIS

Other glands in the body may become invaded, especially the gonads in the male. Orchitis rarely occurs before puberty. The incidence is 18 to 20 per cent at and above the age of puberty. While orchitis usually follows parotitis in 10 days, and is more often unilateral than bilateral, evidence seems to indicate that it can precede the appearance of parotitis, occur simultaneously or exist as the sole clinical manifestation.⁹ At one time it was thought that the virus was carried by the hand from the mouth to the penis, and that it travelled up the urethra to the testicle. This was disproved by Radin at Camp Wheeler.³

Trauma to the testicle during incubation period and during the parotitis has been thought to precipitate testicular involvement. But Wesselhoeft failed to substantiate this.¹⁰ Dukes¹² and Radin³ have shown that strict bed rest did not reduce the incidence of orchitis. On the other hand, Place¹¹ reports that only a 5 per cent incidence of orchitis occurred with cases in which thigh bridges with cotton nests and suspensories were used "to protect the testes from trauma and pressure."

Wesselhoeft⁹ cites a series of 100 cases in which he administered a preparation of lead. The first 82 did not develop testicular involvement, but in the following 18 cases there were five cases of orchitis, and one of epididymitis; and he abandoned the

treatment as futile. Thalhimer¹³ asserts that large doses of convalescent serum (40-60 cc.) will be effective in alleviating complications such as orchitis. But Wesselhoeft⁹ feels that convalescent serum is of no definite practical value. The treatment of orchitis consists mainly in affording as much relief as possible by means of local applications of heat or cold. Testicular support is comforting. Sedation is usually given. Wesselhoeft concludes that by early operation on the tunica albuginea in severe cases atrophy can be avoided.

RELATIONSHIP OF SUBMAXILLARY GLAND INVOLVEMENT AND ORCHITIS

In reviewing the literature we have not found any direct reference to the relationship of submaxillary involvement in mumps to subsequent orchitis. In cases observed at the Station Hospital, Fort Oglethorpe, Georgia, we noted that patients with parotitis and submaxillary involvement were more prone to develop orchitis than those who had parotitis only. In an effort to establish the validity of this observation, we made careful studies of the following 100 consecutive patients. Our patients were enrollees of the CCC, 4th Corps Area, ranging in age from 17 to 22, and were all from rural communities. The majority of those developing submaxillary gland involvement did so after the parotitis. The submaxillary enlargement usually preceded the orchitis by one or two days, and frequently outlasted it.

Table 1 indicates that 41 per cent of the series had submaxillary involvement.

TABLE 1
INVOLVEMENT IN 100 CASES

	Bilateral Parotitis	Unilateral Parotitis
Parotitis only	37	17
Parotitis with submaxillary only.....	13	10
Parotitis with submaxillary and orchitis.....	14	2
Parotitis with orchitis only.....	4	1
Parotitis with submaxillary and epididymitis: 0		1
Submaxillary only—no parotitis	(1)	
Total	68	(1) 31

Radin³ had parotid gland involvement in 4,243 cases with submaxillaries in 440 or about 10 per cent. Wesselhoeft⁹ states that

he had submaxillary involvement in about 50 per cent of his cases.

Table 2 indicates that 51.85 per cent of the total bilateral parotid cases with submaxillary involvement developed orchitis.

TABLE 2
INCIDENCE OF ORCHITIS

Total orchitis with bilateral parotitis.....	18
Total bilateral parotitis with submaxillary involvement	27
Number of above developing orchitis.....	14

Table 3 indicates that 15.4 per cent of the total unilateral parotid cases with submaxillary involvement developed orchitis. While the above tables indicate the importance of submaxillary involvement to orchitis, its relative importance is much greater in bilateral mumps.

TABLE 3
INCIDENCE OF ORCHITIS

Total orchitis with unilateral parotitis.....	3
Total unilateral parotitis with submaxillary involvement	13
Number of above developing orchitis.....	2

SUMMARY

1. Out of the 41 cases with submaxillary involvement (with unilateral or bilateral parotitis) 16 developed orchitis—39 per cent.

Of the 59 cases without submaxillary involvement only five developed orchitis—8.5 per cent.

2. We found the incidence of orchitis to be four and one-half times as great in the group that suffered from submaxillary involvement as in the non-submaxillary group.

3. Out of the 21 cases of orchitis in our series of 100 cases, 16 had submaxillary involvement—76.2 per cent.

4. We found that about three out of every four patients with orchitis had submaxillary involvement as well.

CONCLUSION

From our observation, while the number of cases is not statistically significant, we feel that there exists a relationship between the submaxillary involvement in mumps and the development of orchitis.

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MENINGITIS CAUSED BY THE HIGHER FUNGI

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NEW ORLEANS

Although meningitis caused by the higher fungi is comparatively rare, the condition does present some important considerations both to the clinician and the medical bacteriologist. Of the numerous fungi that have been described only four warrant mention in a survey covering infections of the central nervous system. These are *Actinomyces*, *blastomyces*, *torula* and *coccidioides*.

ACTINOMYCOTIC MENINGITIS

Actinomycosis is mainly a disease of cattle, although it does occur in other animals and in humans. The primary lesion in man is frequently in the oropharynx or adjacent structures, but may be in the lungs, the intestinal tract or the skin. Apparently humans acquire the disease from contact with infected hay or grain. The causative organism, now generally referred to as *Actinomyces*, has been described in the past under a great variety of names.

Infection of the central nervous system by *Actinomyces* almost always occurs fol-

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lowing a primary infection elsewhere in the body. The usual method of spread to the meninges is by direct extension from a primary focus in the soft tissues or bony cavities of the head. This is most often an infection in the jaw, but the original lesion may be in some other portion of the face, in the middle ear, the nasal sinuses, the mouth or throat. The infection usually extends intracranially through the foramina at the base of the skull but at times this extension occurs directly through the bone. Infection of the meninges also may occur secondary to a focus which is not contiguous to the central nervous system. In a great majority of cases falling into the latter category, the source of the infection is intrathoracic, either the lungs or bronchial glands. Occasionally it is located elsewhere; for example, in the intestinal tract or skin; in these instances there may or may not be an intermediate stage of pulmonary involvement. When metastatic in this fashion, infection of the meninges always results from invasion of the blood stream. Other secondary lesions may result also once generalized septicemia has become established. Whether infection of the central nervous system is ever primary, in the sense that it is the sole actinomycotic lesion existing, is a debatable issue; certainly, this is a rare phenomenon, if it occurs at all.

Actinomycotic meningitis is most common in young and middle aged adults but it may develop at any age. The majority of afflicted individuals live in rural districts. That observation is understandable in view of the prevalence of the infection among domestic animals; yet, paradoxically, very few humans who become infected give a history of direct contagion.

The pathologic reaction in actinomycosis of the central nervous system may take several forms.¹ Meningitis is most common. The inflammatory exudate in the subarachnoid space is very thick and usually limited to the base of the brain. The pus has a yellowish tinge. Organization may occur with partial obliteration of the subarachnoid space by fibrous tissue. On micro-

scopic examination, the exudate is found to be composed principally of leukocytes, fibroblasts and fungi. Another pathologic process which may exist, either alone or in conjunction with meningitis, is brain abscess. Abscesses of this type are of variable size; they are usually single but may be multiple. The cerebral substance is their favorite location but, strangely, the hypophysis is involved frequently. Cerebellar involvement is rare. Most actinomycotic abscesses are similar grossly and histologically to other chronic types, but their true nature can be recognized by the presence of the characteristic fungi. Occasionally an encapsulated gelatinous or granulomatous lesion forms, differing from the more common suppurative process.

The symptomatology of actinomycosis of the central nervous system is variable. Many clinical features depend upon the type of pathologic involvement which is, as has been mentioned, irregular. Focal symptoms or signs frequently exist in association with a brain abscess, the nature of these being conditioned by the size and location of the lesion. The commonest manifestations of this sort are hemiparesis with the allied reflex alterations, convulsions and visual field defects. Additional symptoms and signs present in many cases include headache, dizziness, vomiting, papilledema, cervical rigidity, positive Kernig sign, muscular hypertonicity, generalized hyperreflexia, delirium and terminal coma. The foregoing manifestations are not specific and may be encountered in association with brain abscess or meningitis caused by any of the common pyogenic organisms. The following are other features of the clinical picture more characteristic of this infection. Fever is usually mild, seldom going above 101° F. The course of the disease is relatively chronic, almost invariably extending over a period of several months, sometimes persisting for over a year and occasionally up to two or three years. There is surprisingly little systemic response to the infection; almost until the time of death, the patient appears comparatively well, even though profound changes have

been produced in the cerebrospinal fluid. Abnormalities in the cerebrospinal fluid may precede by weeks or months development of the initial clinical symptoms and signs of meningitis. Diagnosis is facilitated by the recognition of other actinomycotic lesions extending outside the central nervous system.

Characteristically, the cerebrospinal fluid is extremely purulent, sometimes being so thick that it will scarcely flow through a lumbar puncture needle. The fluid often coagulates after being removed from the subarachnoid space. Fluid so markedly purulent is seldom found under other circumstances and it is suggestive of actinomycotic meningitis particularly, when minimal clinical findings exist coincidentally. The cells usually number several thousand per cubic millimeter and are mostly polymorphonuclear leukocytes. The total protein content is elevated considerably; the sugar and chloride contents usually are low. When a small quantity of cerebrospinal fluid is spread thinly on a slide, the characteristic yellow tinged "sulphur" granules sometimes may be seen with the naked eye. Stained preparations reveal the granules to have both gram-negative and gram-positive components. The organism may be cultured from the cerebrospinal fluid; generally this can be accomplished best under anaerobic conditions, although occasionally it grows aerobically. Isolation of the fungus from cerebrospinal fluid is not feasible always. Animal inoculation is of little or no value as an aid to diagnosis.

The prognosis in actinomycotic meningitis is poor; all cases terminate fatally. Therapy is entirely symptomatic, although empirically iodides may be prescribed.

BLASTOMYCOTIC MENINGITIS

Infection with *Blastomyces* (*Oidiomyces*) occurs in a cutaneous form, with primary involvement usually on the face or hands, and in a systemic form, where widespread dissemination of the organism occurs following invasion through the respiratory tract. Metastatic lesions, associated almost solely with the systemic form of blastomy-

cosis, may develop in skin, bones, spleen, liver, kidneys, lymph nodes and rarely in the central nervous system. The fungus reaches these organs through the blood stream. Infection of the brain and meninges may be preceded by involvement of bone or soft tissue adjacent to the central nervous system, with subsequent direct spread to the contiguous nervous tissue. In other cases, the intracranial infection results from pyemia per se without that intermediate stage. A primary form of meningeal blastomycosis, with no definite manifestations of systemic invasion, has been described also but very likely this interpretation is misleading.^{2,3}

The pathologic changes in the central nervous system are, for the most part, non-specific and closely resemble those associated with tuberculous meningitis. A moderate amount of exudate forms, especially at the base of the brain. Firm nodules, ranging from a millimeter up to several centimeters in diameter, may be situated over the surface of the brain. These nodules are composed principally of fibrous tissue and their central portions often become necrotic. Lymphocytes, endothelial cells, giant cells and organisms are fairly abundant in such lesions. The tendency to caseation and abscess formation is rather pronounced.

Blastomycotic meningitis is characterized by a course usually lasting several months. The symptomatology is the same as in other forms of chronic meningitis. Focal signs and cranial nerve palsies are present occasionally. Fever may be high and is often of an irregular type. Coma supervenes eventually and the outcome is always fatal. The clinical diagnosis is facilitated by the finding of other manifestations of the disease. The skin lesions, characteristically, are elevated, ulcerated areas; abscesses in subcutaneous tissue also exist. Invasion of bone produces localized destruction. Pulmonary involvement, which is exceedingly common, is revealed by a persistent productive cough.

The cerebrospinal fluid frequently is under increased pressure and cloudy. The

cell count is slightly to moderately increased, seldom exceeding 500 per cubic millimeter. Usually polymorphonuclear leukocytes predominate, but this is not true invariably. The total protein may be elevated and the sugar and chloride content reduced. The organism may be seen on direct examination of unstained cerebrospinal fluid, appearing in the form of a round, refractile cell which has a thick wall. Its size is variable but usually the cell diameter is between 10 and 20 microns. Budding forms may be found. In cultures these cells grow in the form of a white mold. The organism may be grown at room temperature on glucose agar.

There is no satisfactory therapy for any form of blastomycosis. Roentgen therapy, excision and iodides have been used in treating localized lesions, but it is doubtful that these measures have any beneficial effects after meningeal invasion has resulted.

TORULA MENINGITIS

Fungi of the genus *Torula* are widely distributed in nature. They have been cultivated from sources such as the earth, insects, insect nests, plants, trees, fruits, milk and butter. Many varieties have been described. The species causing human infection is known as *Torula histolytica*. This organism possesses definite affinity for nervous tissue and generally the outstanding clinical features of the infection are referable to involvement of the central nervous system. The only other issue for which the organism has any strong predilection is lungs. Occasionally involvement of lymph nodes, intestine, liver, spleen or adrenals is manifest. Skin lesions are present very rarely.

This infection is most common in adults but occasionally it develops during childhood. Males are afflicted more often than females. Apparently occupation plays no significant role. The respiratory tract is the usual portal of entry, when the organism invades the human body. Dissemination then takes place through the blood stream or lymphatics with involvement of the central nervous system resulting almost

invariably, and in at least half the cases, involvement of other organs occurs also.

The pathologic changes in the central nervous system are variable. Freeman has classified these into three types—meningeal, perivascular and embolic.⁴ Nearly half the cases are purely meningeal. This reaction bears close resemblance to that occurring in tuberculous infections. Microscopically, the meninges show a lymphocytic infiltration, localized fibrosis, giant cell formation and occasionally caseation. Organisms may be abundant. Perivascular changes of a greater or lesser degree are present in most cases. Where superficial vessels are involved, it is likely that the perivascular spaces have been invaded by direct extension from the subarachnoid space. Similar changes about deep vessels are related to embolic foci. Granulomas and cysts are other lesions of embolic origin. These occur in the basal ganglia, the mid-brain and the cortex. The cysts, which typically are multicular, contain a gelatinous fluid and numerous organisms. They may be multiple and are sometimes very large. They rupture occasionally. In some instances microscopic studies of brain tissue have revealed an increase of neuroglia, degenerative changes in ganglion cells and degeneration of myelin sheaths.

The symptomatology of torulosis varies with the nature and extent of the pathologic changes. The predominant clinical features are referable almost always to invasion of the central nervous system. Diverse symptoms are caused by foci in other organs. Usually the initial manifestation is intermittent frontal headache; this gradually becomes more severe and continuous. Occasionally the disease begins abruptly with an excruciating persistent headache. Anorexia, vomiting, vertigo, backache, stiffness of the neck and positive Kernig sign are additional early features. Irritability, insomnia and other mild changes in personality are fairly common; ultimately, a frank organic psychosis may evolve. Cranial nerve disturbances occur irregularly. Papilledema, diminished vision, strabismus, diplopia, ptosis, and deafness have been re-

ported. Reflex alterations are found often. Gross focal manifestations, such as hemiparesis or aphasia, exist at times. As the disease advances, emaciation and profound debility appear. The course is steadily progressive over a period which generally ranges between a few weeks and six months but which may extend for a year or longer. Remissions occur rarely. There is no acute systemic reaction to the infection. The temperature and pulse remain normal or nearly normal. A mild leukocytosis or anemia may develop. Coma supervenes terminally and the infection always proves fatal.

Usually the cerebrospinal fluid is under increased pressure, though this finding is not constant. The fluid may appear clear, turbid or, rarely, xanthochromic. Commonly it contains several hundred cells per cubic millimeter but the cell count may range from normal up to approximately one thousand cells per cubic millimeter. These cells are chiefly or entirely lymphocytes. Both the sugar and chloride levels may be reduced. The total protein content is often elevated. The colloidal gold curve is abnormal but shows no typical alteration. Yeast-like cells may be visible on direct examination of the cerebrospinal fluid; these are round or oval and range from a few microns up to about 50 microns in diameter. Many have a double wall and some show budding. Organisms can be identified in unstained preparations. They may be seen in the counting chamber among the white blood cells, and at times are more numerous than the latter. They are often present in great numbers in the sediment following centrifugalization. Although the fungi are gram-positive, it is difficult to recognize them in stained smears. Torulae grow on ordinary culture mediums but growth is most rapid on Sabouraud's medium. Cultures of the cerebrospinal fluid are usually positive. Diagnosis is aided by the inoculation of cerebrospinal fluid, or substance from a culture, intraperitoneally in white mice. After mice succumb to the infection, fungi may be isolated easily from various organs.

There is no specific treatment for this disease. However, the common symptomatic measures may produce temporary relief.

COCCIDIOIDAL MENINGITIS

Coccidioidal granuloma is an endemic disease having a limited geographic distribution. It occurs principally in the San Joaquin Valley, California, but a few cases have been reported also from nearby regions.

The fungus causing the infection is *Coccidioides immitis*. It gains entrance to the body through either the lungs or the skin, and subsequently is carried by the blood stream to other organs. Infection of the central nervous system occurring in this manner may exist as the only metastatic lesion or along with various others. Approximately 25 per cent of patients with coccidioidal granuloma develop infection of the meninges.⁵ The disease occurs usually in adults and is more common in males than females.

The pathologic findings to some extent vary with the duration of meningeal involvement. An exudate accumulates in the subarachnoid space and eventually it becomes organized. This inflammatory reaction is most pronounced at the base of the brain. Frequently the drainage of cerebrospinal fluid is interfered with and internal hydrocephalus results. In chronic forms, granulomatous lesions are common. Small nodules are found over the dorsolateral surfaces of the brain. Larger lesions tend to occur in the basilar cisterns and about the spinal cord. Histologically, the meningeal reaction resembles that associated with a tuberculous infection, except for the presence of the offending organism. Direct involvement of the neural parenchyma is rare.

The symptoms of coccidioidal meningitis are non-specific. They are similar to those observed in other chronic meningitides, with evidences of internal hydrocephalus often superimposed. The outstanding manifestations include headache, nausea, vomiting, cervical rigidity, occasionally papilledema and in late stages stupor. Sometimes, though not always, coccidioides infection of other body organs may be evident. The

skin lesions are variable but multiple subcutaneous abscesses and chronic ulcers are seen most regularly. Pulmonic involvement produces symptoms and roentgenographic changes suggestive of pulmonary tuberculosis. The systemic reaction to the infection is characterized by malaise, cachexia, generalized weakness, slight fever and a moderate leukocytosis. Only rarely is the organism found in the blood. The duration of the disease, after the onset of meningeal symptoms, varies from a few days up to one year and in most cases extends over a period of several months. Diagnosis is aided sometimes by roentgenographic demonstration of erosion of the inner table of the skull or involvement of vertebrae.

Changes in the cerebrospinal fluid closely resemble those occurring in tuberculous meningitis. Generally the fluid is under increased pressure. It may appear clear, turbid or xanthochromic. The cell count averages several hundred per cubic millimeter but may be as high as 2000 per cubic millimeter. Lymphocytes predominate. The total protein may be elevated, the sugar and chloride values diminished. Usually the colloidal gold curve is of the first zone type. The organism may be isolated from the cerebrospinal fluid, although this is not always possible. The fungus is spherical, has a double contoured refractile wall and ranges between 5 and 50 microns in diameter. In the process of reproduction, a number of smaller cells form from the protoplasm; after rupture of the cell wall, these are liberated and develop into adult forms. Budding is not seen. The organism may be identified on microscopic examination of unstained preparations. In stained preparations it is gram-negative. In artificial cultures, it appears as a white mold. Sabouraud's medium is very suitable for its growth. Confirmation of the diagnosis may be obtained by animal inoculation; four to six weeks after injection, intraperitoneally, the fungus will kill a guinea-pig and lesions revealed at necropsy are similar, apart from the organism, to those associated with tuberculosis.

Coccidioidal meningitis always terminates fatally. Various drugs have been used in the treatment of coccidioides but none has given consistently satisfactory results. Symptomatic therapy is the same as for other forms of meningitis. When localized compression of the spinal cord exists, laminectomy is justified sometimes in an attempt to remove granulomatous tissue.⁶

SUMMARY

The neurologic aspects of fungus infections have been emphasized in the foregoing review.

The syndromes discussed are characterized clinically by the occurrence of a chronic meningitis, associated at times with focal symptoms and signs. The diagnosis can be established positively only by identification of the parasite.

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THE CRUVEILHIER-BAUMGARTEN SYNDROME

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NEW ORLEANS

Recently a case of cirrhosis of the liver was observed which clinically manifested the signs of portal hypertension and which also showed evidences of collateral circulation as manifested by the presence of a roaring murmur and thrill over the area of the ensiform process. Such a syndrome has attracted but scant attention in the American literature, since most of the cases have been reported in the German, French, English and Italian journals. However, a short

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while ago an excellent review of the literature on this case syndrome revealed 52 cases and contained two additional case reports.

Cruveilhier^{1a} described a patient who had originally been observed by Pegot in 1833. This patient showed dilated abdominal veins, a caput medusae, and a loud murmur in the umbilical area. Postmortem examination disclosed a large spleen, a grossly normal liver, and a widely patent umbilical vein. Baumgarten^{1b} reported a case with distended abdominal veins, ascites, splenomegaly, anemia, and leukopenia. No epigastric murmur was heard. Autopsy revealed an atropic liver, splenomegaly and a widely patent umbilical vein. Since that time numerous authors have reported similar cases which presented an epigastric murmur frequently associated with a thrill and concomitant signs of portal hypertension. Necropsy in the majority of cases has revealed cirrhosis of the liver with excessive porto-umbilical circulation. European authors have attached to this combination of findings the term "Cruveilhier-Baumgarten syndrome." Green² states that this term may be applied to patients having the clinical picture of portal hypertension featured by evidence of an excessive umbilical circulation and the presence of a loud abdominal murmur and thrill.

Armstrong¹ and his associates divide these cases into several groups which have more pathologic than clinical significance. They separate the cases which at postmortem show patency of the umbilical vein, atrophy of the liver with little or no cirrhosis and splenomegaly into what they term "Cruveilhier-Baumgarten disease." All other cases of portal hypertension from disease of the liver or portal system with patent umbilical veins or patent paraumbilical veins, or with patency of other collateral veins in the area are classified as "Cruveilhier-Baumgarten syndrome."

Frequently the murmur and thrills due to the collateral circulation in this syndrome has been mistaken for evidence of organic heart disease. Indeed one author³ has stated that this condition should be considered on a differential diagnosis of congenital heart

disease. I wish to report a case in which at first the possibility of an arteriovenous fistula was strongly entertained.

CASE REPORT

T. D., a 48 year old, white, married lumber worker was admitted to the Charity Hospital Medical Service (Tulane Unit) October 25, 1941. The patient's reason for coming to the hospital was that he had been advised to do so by his attending physician because of "liver trouble."

Seven years prior to admission the patient experienced an attack of jaundice, which was asymptomatic except for a little fever. In the following five years he had four such attacks. There was no history of colic, melena, abdominal pain or clay colored stools. Prior to the first episode the patient had drunk one or two drinks of liquor daily, but upon the advice of his physician he had stopped the use of alcohol absolutely.

The patient then felt perfectly well until September 1, 1941, when he developed a slight fever. The fever abated after he had taken quinine daily for seven days. On October 22, 1941, the patient was suddenly seized with a severe epigastric pain which radiated to both axillae. This pain was not associated with vomiting, diarrhea, or melena, nor was it colicky in character. After about three hours the acute pain disappeared, leaving a residual soreness which was present on admission three days later. During the acute attack the local physician noticed that the abdomen was distended and that edema of the ankles, legs and scrotum were present.

The only positive findings in the system inventory was deafness of many years' duration, ever since past employment in a boiler factory. The previous history and family history were not significant.

Physical examination showed a middle-aged white male who was not acutely ill. The abdomen was protuberant, but there was no wasting of the upper part of the body. The skin was warm and elastic, several spider angiomas were apparent over the thorax, just beneath the right sterno-clavicular joint, and one was present on the left shoulder. These consisted of a red central body from which radiated many legs, and which blanched on pressure over the center. The angioma on the left shoulder pulsated synchronously with the patient's pulse. There was no visible evidence of collateral circulation or varicosities over the abdomen and thorax. A cleft in the sternum could not be palpated. There was impairment of hearing. The periphery of the sclerae was slightly icteric. Many teeth were carious. Examination of the heart and lungs showed no abnormalities.

The abdomen was symmetrically distended. Shifting dullness and fluid wave were not demonstrable. The liver and spleen were not felt. There was edema of the scrotum and of the prepuce.

The ankles and legs presented slight pitting edema. Rectal examination revealed external hemorrhoids.

Laboratory data: The urine was essentially normal, except for a slight trace of bile. The icteric index was 18 units. The total protein was 6.16 mg. The blood cholesterol was 83 mg. per cent. The hemoglobin was 60 per cent; erythrocytes 3,500,000; leukocytes 2,500; with 56 per cent neutrophils, 36 per cent lymphocytes, and 8 per cent monocytes. The blood serology was negative.

The Takata Ara was positive in tubes 1, 2, and 3. The cephalin flocculation test was 3+ positive. Intravenous hippuric acid excretion was only 0.18 gm.

The roentgenogram of the chest showed nothing of note, except a cervical rib on the right side. Infra-red photography of the abdomen did not disclose any distended abdominal veins. Clinical diagnosis: Cirrhosis of the liver.

Special examination: On palpation of the chest a fine thrill was felt over the xiphoid process. On auscultation a loud roaring murmur was heard.

The thrill and murmur were not invariably present. The character of the murmur was like a strong wind but it was not constant, dying down at times and reappearing. Pressure with the flat end of a pencil slightly to the left of the xiphoid process caused complete disappearance of both murmur and thrill. When the pressure was terminated, both thrill and murmur reappeared. Change of position from one side to the other, or from one side to the dorsum, did not appear to alter the bruit. At times the murmur and thrill were manifest in the erect position, and at other times they were absent.

The murmur had a marked respiratory rhythm. The greatest intensity of the murmur developed during inspiration but the increase in intensity began during the latter part of expiration. During a number of periods of study the peaks of intensity due to respiration varied greatly since there was a gradual waxing and waning through a period of 10 to 45 respiratory cycles.

At times there was a definite accentuation of the murmur due to the heart beat except for a few special circumstances. It became completely continuous without any respiratory effect following the drinking of warm broth, the injection of histamine and one occasion during a fasting state. This last observation was made during a period of study after the patient had suffered from an acute cellulitis of the leg for which he was treated with sulfathiazole. When the patient stopped breathing, the murmur became steady in its intensity and frequently would show diminution after a period of 20 to 30 seconds. Abdominal pressure intensified the murmur.

The intensity of the murmur and the response to various procedures was registered graphically by Dr. R. H. Turner in his laboratory.

COMMENT

The striking conversion of the bruit from a relatively intermittent murmur at first into a continuous loud roar by the administration of histamine or the drinking of warm broth is evidence that one of the factors governing the intensity of the murmur is the rate of blood flow through the splanchnic system.

DISCUSSION

There has been considerable speculation concerning the exact nature of the disturbances giving rise to such circulatory manifestations. Various theoretical anatomic variations which might set the venous column of blood vibrating with the resultant production of the thrills and bruits characteristic of the Cruveilhier-Baumgarten syndrome have been put forward as an explanation. Both Thayer⁴ and Lutembacher⁵ have discussed in their articles the possible causes of the venous murmur and thrill occurring in cirrhosis.

One author stated that the cause of the signs was due to the transmission of a murmur produced by venous eddies set up at the entrance of the vena cava into the right auricle. Other concepts were that pressure⁶ traction, or distortion of the vena cava might be the cause of venous disturbances. Dilated coronary veins, esophageal varices, arteriovenous anastomoses⁷ and anemia have all been incriminated as the causative factor of this circulatory disorder. Thayer pointed out the features which invalidated these assumptions. He felt that a constricted channel passing to a dilated vessel deep in the abdomen would not be manifested by murmurs and a thrill superficially. It is indeed hard to conceive that palpable thrills or loud murmurs could arise from such disturbances. Neither could light compression cause thrills and murmurs to disappear if deep fluid eddies were the cause of such murmurs or thrills.

In the majority of cases presenting a palpable thrill and continuous murmur, post-mortem examination revealed a peculiar configuration of the porto-umbilical venous network. The abnormalities were not constant in their architecture but any of those

described can readily explain the phenomenon. In many of the reported cases presenting the features diagnostic of the syndrome, which have come to necropsy, persistent umbilical veins or paraumbilical veins were found to be patent.⁵ Whether these paths of collateral circulation were congenitally functional or whether their patency was resumed secondary to portal obstruction can only be conjectured. In the majority of cases the umbilical vein or paraumbilical veins derived a profuse collateral delivery from anastomoses with the thoraco-abdominal veins. In some instances the presence of fibrous bands constricting the accessory circulation was an additional factor in circulatory obstruction. An excellent discussion of these venous paths, is given in the article by Armstrong¹ et al.

An anatomic feature which was found to be prominent in many cases, and which I feel is clinically significant, has been found at postmortem in many of the cases. Gwyn,³ in an excellent report of a patient in whom the murmur disappeared on pressure, pointed out a structural arrangement which had been noted before. In his patient the vein appeared to run up the sternum and perforated a small fissure at the xiphosternal juncture. Immediately beneath the sternum and xiphoid this vein could be seen to enter a large venous sinus 1 to 4 cm. which was situated in the areolar tissue just under the bone. Into the sinus and coming directly through the diaphragm ran another large vein, and this vein in turn could be seen to come from the suspensory ligament and to be connected with moderately distended umbilical veins. From the upper point of this sinus there was a wide open venous connection with the much dilated internal mammary vein. Palpation of the sternum revealed the cleft in this case. Gwyn concluded that defects in ossification of the sternum producing such clefts are a not uncommon anomaly. The collateral venous trunks arising in the course of cirrhosis may easily pass through such routes to sinuses under the sternum. Fluid eddies set up by blood passing from a constricted

channel to a dilated sinus may give rise to loud murmurs and thrills in such cases.

Henry⁸ described an instance in which a loud roaring murmur was heard over the ensiform which disappeared on light pressure. Under the ensiform cartilage and extending to the articulation of the sternum, there was found a venous sinus about 7 mm. in diameter. The anterior wall of the sinus could be seen through an opening in the ensiform. Proceeding from the opening in the ensiform were several superficial veins probably in communication with the sinus.

Lutembacher⁵ reported a somewhat similar case in which chondrofibrous tunnels existed in the xiphoid process. There was a venous plexus deeply situated under the right rectus which communicated with the deep epigastric and the internal mammary vein.

It is felt that this same situation obtained in the case which I have reported here. The reason for believing that there was a cleft in the sternum is that the vein could be traced up to the xiphoid, and pressure at any point along the course of the vein caused both murmur and thrill to disappear. Localized pressure over the xiphoid with the tip of a pencil obliterated both murmur and thrill. Unfortunately the sternum was not x-rayed for any osteochondral defect.

It is suggested that in patients presenting the signs of portal obstruction associated with a murmur or thrill or both, which may be made to disappear by compression, that collateral circulation dependent on defects in the sternum may be present. Palpation or radiologic examination may reveal such defects.

The most recent review of the literature on the Cruveilhier-Baumgarten syndrome listed 54 cases of this interesting condition. Search of the literature reveals an additional 11 cases previously recorded in which the clinical picture was consistent with the Cruveilhier-Baumgarten syndrome. Gwyn,³ Bates,⁹ Hall,¹⁰ Wilson¹¹ and Mirvish¹² have each reported a single case. Kenawy¹³ states that he has observed six cases associated with bilharzial cirrhosis of the liver. This with the case described here adds 12 cases,

so that a total of at least 66 cases of the Cruveilhier-Baumgarten syndrome have been reported to this date.

SUMMARY

A case of cirrhosis of the liver which fulfills the requirements of Cruveilhier-Baumgarten syndrome, namely clinical portal hypertension featured by a loud epigastric murmur and thrill, is reported.

Attention is called to a fact which has hitherto not been stressed, that in cases of this syndrome in which the murmur or thrill may be altered by compression, there may coexist an osteochondral defect of the sternum.

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NEW ORLEANS Medical and Surgical Journal

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THE RATIONING OF GASOLINE

Elsewhere in this issue of the Journal is published a letter that was sent out by one of the county medical societies of Texas to its constituent members. This has to do with the use of the physician's automobile now that gasoline rationing is in effect. It will be well worth while if every doctor were to read these words of advice issued by the Tarrant County Medical Society.

The physician now is in a rather peculiar situation on account of gas rationing. Doctors can get "C" cards because an automo-

bile is necessary for them in the practice of their profession. The doctor will be watched extremely carefully. People are always likely to criticize when they feel that they are not being treated entirely justly. There is a good deal of feeling against gasoline rationing, more particularly by selfish individuals who are not willing to give up and make sacrifices for the war effort. If these people see the doctor using his car and driving it on non-professional trips it is going to cause gossip, possibly ill feeling. The physician must be extremely punctilious and very careful about using the car for social and pleasure trips. The same restriction applies to his family.

Already in the East, where rationing has been in effect for some months, some doctors are being censured for non-professional use of their automobiles. Even in the daily press, comment has been made about doctors' cars being present at racing meetings and sporting events. Our profession is an honored one, the physician is always looked upon as being a respected and honored member of the community. It is decidedly up to us to see that nothing is done in this car rationing plan to lower the respect and honor that we have in the community.

NUTRITION IN THE AGED

The feeding of the old person is frequently a difficult undertaking. The old individual has cultivated a taste for certain foods during the course of his life and a distaste for others. The latter group is often composed of the foods which are the most nourishing and which are highest in their vitamin and mineral content. Furthermore, the old individual has often a poor appetite which has to be pampered and lastly he is handicapped in many instances by dentures which fit poorly, producing ulcers in the mouth and which, even if no local lesions are brought about, do not permit proper mastication of the coarser dietary constituents. He learns to eat concentrated foods, soft, pappy articles which again do not supply the vitamins and minerals necessary for well being.

As a result of the dietary bad habits of the older individual, it is common to find in these persons evidences of vitamin deficiency. These deficiencies are usually those which are labeled chronic dietary deficiency and are multiple rather than single. The vitamin B complex is the one vitamin which is most likely to be inadequate for the maintenance of good health. These older persons frequently have cracks and fissures in the angles of the mouth, atypical cheilosis; often the tongue is a deep, somewhat fiery red, with well defined fissures. The skin is unusually thickened and pigmented, especially over the bony prominences. They will complain of nervousness, the family recognizes their irritability, diarrheas are common, while the mental expressions are those that often are attributed to old age, such as mental confusion, forgetfulness, depression and anxiety which, it is true, are common in old age but which can be improved materially by an adequate diet. The older woman may have a chronic vaginitis, or proctitis may be present in either sex as result of inadequate diet. The chronic conjunctivitis and lacrimation of old people is said to be due in part to vitamin A deficiency. There is a host of other rather indefinite, somewhat vague objective findings which, in the opinion of most nutritionists, point to inadequacy of the diet.

In a recent survey of two hundred patients, Goldsmith found many of these evidences of dietary inadequacy are present in the older aged group. The arteriosclerotic persons to a large per cent showed the findings of a vitamin lack, particularly in the white race.

The obvious implications are that the older person should observe proper dietetic hygiene, just as the younger adult should eat the sane and sensible foods, or as the competent physician insists that his baby and children patients should be fed. As a matter of fact it is more necessary for the older person to take in a greater amount of vitamins and minerals than does the younger adult because in the aged patient storage may be poor, utilization imperfect and excretion rapid.

VIRUS PNEUMONIA

A recent review* brings out the pertinent and known facts regarding a most interesting condition which has been widely observed throughout the country. Although the general concept is that this is a relatively new disease, actually it was probably as long ago as 1872 that this peculiar type of pneumonia was recognized.

A variety of names have been given to this disease, commonest of which is a virus pneumonia, but it has also been called an acute pneumonitis, acute interstitial pneumonitis, atypical pneumonia with leukopenia, bronchial pneumonia of unknown etiology and many other terms. In order to classify accurately this disease, the Pneumonia Commission of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the United States Army has designated the disorder as "primarily atypical pneumonia, etiology unknown."

For the purposes of this discussion the name virus pneumonia will be employed although investigators have been unable to reproduce the disease with any of the unknown viruses, or is it known definitely that it is produced by a virus. The ordinary laboratory studies have not identified the causative factor, although many organisms have been incriminated. Elaborate investigations of a laboratory nature have failed to show that the disease is due to any one entity. These studies include intensive use of animal inoculation, with practically negative results.

Virus pneumonia is essentially a disease of the younger portions of the population. Most of the cases are seen in the age group from which the Army is drawn and while the young adults have been the ones most frequently attacked, the age limits run from four to eighty years. Sex distribution is equal between the two sexes. It might be noted here that apparently the disease is not extremely infectious, particularly when

*Dingle, J. H., and Finland, M.: Medical progress: Virus pneumonias: II. Primary atypical pneumonias of unknown etiology, *New England J. M.*, 227:378, 1942.

a patient does not have a cough. However, the doctors and nurses and soldiers living in barracks have been the persons most frequently attacked so that very definitely there must be contact spread of the disorder.

Virus pneumonia occurs with various degrees of severity. In most instances it is associated with fever, cough, headache, chilliness and sweats. Often sore throat is present but lasts for only a day or two. Symptoms in mild cases naturally are not particularly severe but in the more severe cases the symptoms are exaggerated, prostration is often extreme and the temperature may persist for several weeks. Convalescence is prolonged in the more severe cases but death rarely occurs, consequently the pathologic studies are at the best quite skimpy.

One of the most interesting aspects of virus pneumonia is the almost complete absence of physical signs by common methods of examination. In the ordinary case the respirations are not increased, there is no change in percussion dulness or in the character of the breath sounds. Such pulmonary signs as are noted are confined to the presence of subcrepitant rales, generally only brought out by coughing. On the other hand, the x-ray signs are definite and distinct. One of the most remarkable features of the disease is to observe the often extensive lesions in the lungs disclosed by the roentgenogram while the physical signs are virtually absent. The x-ray evi-

dences of the disease may persist for many weeks. Incidentally as evidences of the mildness of the disease it might be stated that in one of the Army camps in this country 100 consecutive chest roentgenograms were made of soldiers who had had a mild "cough or "grip" which incapacitated them only for a few days to those who were more severely ill and required hospitalization for several weeks, in practically all of these instances the x-ray evidence showed the lung mottling which is so characteristic of this type of pneumonia. Likewise it should be observed that probably the disease is much more likely to be discovered nowadays than it was in the past with the almost universal use of x-ray in the presence of pulmonary symptoms. Undoubtedly in by-gone days many of these cases would never have been recognized, possibly the great majority of them.

This is one of the diseases associated with leukopenia and most of such diseases are not helped by the sulfa drugs. The various sulfonamides have been employed without any marked effect on the course of the disease. As a matter of fact it would probably be better not to make use of these drugs because they may possibly cause rather severe reactions and they may furthermore increase the symptomatic discomfort of the patient. The treatment then is essentially the combatting of symptoms; opiates and analgesics to alleviate the pains and aches, expectorants if needed and once in a while oxygen. It probably would be the part of wisdom to isolate the patient.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

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|------------|--|--|
| January 4. | Orleans Parish Medical Society,
Board of Directors, 8 p. m. | Baptist Hospital, Executive Staff,
8 p. m. |
| January 5. | Eye, Ear, Nose and Throat Staff,
8 p. m. | January 11. |
| January 6. | Clinico-pathologic Conference, Charity
Hospital Morgue Amphitheater, 1:30 p. m.
Mercy Hospital Staff, 8 p. m.
Clinico-pathologic Conference, Marine
Hospital, 7:30 p. m. | Orleans Parish Medical Society, Installation
of Officers, 7:30 p. m. |
| January 7. | Clinico-pathologic Conference, Touro
Infirmary, 11:15 a. m. to 12:15
p. m. | January 13. |
| | | Clinico-pathologic Conference, Charity
Hospital Morgue Amphitheater, 1:30 p. m.
Touro Infirmary Staff, 8 p. m.
Women's Auxiliary, Orleans Parish
Medical Society, Orleans Club, 3
p. m. |
| | | January 14. |
| | | New Orleans Hospital Council. |

- January 15. I. C. R. R. Hospital Staff, 12:30 p. m.
- January 18. Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.
- January 19. Charity Hospital Medical Staff, 8 p. m.
Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.
- January 21. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- January 26. Baptist Hospital Staff, 8 p. m.
- January 27. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
French Hospital Staff, 8 p. m.
Catholic Physicians' Guild, 8 p. m.
- January 28. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
DePaul Sanitarium Staff, 8 p. m.
- January 29. L. S. U. Faculty Club, 8 p. m.
New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.

During the month of December the Society held one regular scientific meeting. The program was as follows:

Glomerulonephritis, by Dr. Edgar Hull.

Hypogastric Sympathectomy, by Dr. B. Bernard Weinstein.

Vaginal Ureter-Lithotomy, by Dr. Robert F. Sharp.

The seventeenth Stanford E. Chaille Memorial Oration was held Saturday, December 19. Dr. Roy Biggs Henline, Associate Attending Urologist: Brady Urology Department, New York Hospital; Riverside Hospital; Attending Urologist, New York Foundling Hospital, was the guest speaker. Dr. Henline spoke on Cancer of the Prostate. Dr. E. A. Ficklen gave the memoriam.

At the annual election of the Society held Saturday, December 12, 1942, the following officers of the Orleans Parish Medical Society and delegates to the Louisiana State Medical Society for 1943 were elected:

President-Elect: Dr. Edwin L. Zander.

First Vice-President: Dr. George H. Hauser.

Second Vice-President: Dr. Philip H. Jones, Jr.

Third Vice-President: Dr. Walter Levy.

Secretary: Dr. Daniel J. Murphy.

Treasurer: Dr. A. V. Friedrichs.

Librarian: Dr. Max M. Green.

Additional Members to the Board of Directors:

Dr. Paul G. Lacroix, Dr. E. L. Leckert, and Dr. E. J. Richard.

Delegates to the Louisiana State Medical Society (newly elected):

Dr. Gilbert C. Anderson, Dr. Edgar Burns, Dr. Edmund Connely, Dr. A. V. Friedrichs, Dr. Max M. Green, Dr. George H. Hauser, Dr. Paul G. Lacroix, Dr. Waldemar R. Metz, Dr. Robert Sharp, Dr. Edmond Souchon, Dr. H. Ashton Thomas, and Dr. Edwin L. Zander.

EDWIN L. ZANDER, M. D.,

Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

AN IMPORTANT NOTICE

It is of the utmost importance that the Procurement and Assignment Service for Physicians, Dentists, and Veterinarians, immediately has the name of any doctor who really is willing to be dislocated for service, either in industry or in overpopulated areas, and who has not been declared essential to his present locality. This is necessary if the medi-

cal profession is to be able to meet these needs adequately and promptly. We urgently request that any physician over the age of 45 who wishes to participate in the war effort send in his name to the State Chairman for the Procurement and Assignment Service in his State.

FRANK H. LAHEY, M. D.,

Chairman, Directing Board.

DR. P. S. PELOUZE TO ADDRESS PHYSICIANS OF LOUISIANA

Dr. P. S. Pelouze, who is known throughout the country for his research in gonorrhea, has been given a leave of absence by the University of Pennsylvania, where for many years he has been Associate Professor of Urology, to speak before medical societies throughout the United States on the subject of the medical management of gonorrhea.

Dr. Pelouze will begin his tour of Louisiana in Shreveport on February 1. His planned itinerary is as follows:

February 1-2	Shreveport
February 3	Monroe
February 5	Bogalusa
February 8-10	New Orleans
February 15	Baton Rouge
February 17	Opelousas
February 19	Lafayette
February 22	Lake Charles
February 24	Leesville
February 25	Alexandria

The parish medical societies in most of these areas have already scheduled meetings at which loyal physicians will have the opportunity to hear Dr. Pelouze. Every effort will be made to schedule additional meetings in other parts of the state if a desire to hear Dr. Pelouze is communicated to the Secretary of the State Board of Health or the Secretary of the Louisiana State Medical Society.

Dr. Pelouze, in addition to his extensive research in the field of urology, is a fluent and interesting speaker. He has also written several books dealing with the treatment of gonorrhea and other diseases in the field of urology.

BI-PARISH

The Bi-Parish Medical Society met for its annual meeting December 2, in the Rist Hotel, members and guests present were 16.

As the meeting was called to order, all reverently bowed their heads in remembrance of the departure from their midst of Mrs. August Rist, who had for the past third of a century prepared the superb and bounteous dinners for our Society.

After the excellent dinner was served by Mr. August Rist, the Society convened for its regular meeting. Drs. Glenn J. Smith and W. H. Pipes were elected members of the Bi-Parish Medical Society. Election of officers for 1943 resulted as follows:

Dr. Glenn J. Smith, President.

Dr. M. A. Walker, Vice-President.

Dr. E. M. Toler, Secretary-Treasurer.

Dr. C. S. Toler, Delegate to Louisiana State Medical Society.

Dr. E. M. Robards, Alternate Delegate.

The Scientific program was as follows:

Dr. T. S. Jones, Baton Rouge, La., read a paper on *Trichomonas Vaginalis*.

Dr. M. A. Walker, Angola, La., presented a paper on conditions at the hospital of the State Penitentiary on Health and Sanitation of the Institution, comparing conditions that existed when he assumed head duties, two years ago, which showed a vast improvement during his tenure of office. We trust that Dr. Walker will be retained and further improvement may develop from time to time, for the best interests of the state and the inmates of this institution.

A vote of thanks was extended to Drs. Jones and Walker for the presentation of their excellent and practical papers, also to Mr. August Rist for the superb entertainment and dinner prepared for us.

The Society adjourned to meet in the East Louisiana State Hospital at Jackson, La., the first Wednesday in March, 1943, at 7:30 p. m.

DR. W. J. ROBERTS, President.

DR. E. M. TOLER, Sec.-Treas.

JACKSON, LINCOLN, UNION PARISHES

At a meeting of the Jackson, Lincoln and Union Parishes Medical Society held at the Ruston Sanitarium, December 1, 1942, the following officers were elected for the year 1943:

Dr. J. B. Harris, Ruston, President; Dr. C. S. McDonald, Jonesboro, Vice-President from Jackson Parish; Dr. J. F. Tanner, Bernice, Vice-President from Union Parish; Dr. J. J. Bennett, Ruston, Secretary-Treasurer; Dr. C. C. Colvin, Bernice, Delegate.

DR. J. J. BENNETT,

Secretary-Treasurer.

THE INTERNATIONAL SOCIETY OF SURGERY

By a vote of the delegates from all the affiliated societies of the Americas, representing Argentina, Brazil, Canada, Cuba, Ecuador, Guatemala, Mexico, Paraguay, Peru, the United States, Uruguay, Venezuela, this oldest and most representative worldwide International organization (founded in 1902 through the initiative of the Belgian Surgical Society and the leading surgical societies of Europe and America) temporarily transferred its headquarters from Brussels, Belgium, to New York. The executive committee of the United States division, the largest, and most active contributor to its transactions, felt it their duty conjointly with their Latin-American colleagues, to rescue the society from the perils of the European conflagration, and especially of the Nazi domination.

By action of the Council of Delegates, the executive bureau of the society has been established in the Inter-American Division of the New York Academy of Medicine, directed by Dr. Mahlon Ashford, where Dr. Henry J. Cervantes, assistant secretary and treasurer, and editor of *America Clinica*, the official organ of the society for the Latin-Americas, will be able to render service to the fellows of the society and the medical visitors com-

ing from the Spanish and Portuguese-American countries.

The affairs of the society will be administered by an executive committee composed of Dr. Elliott C. Cutler, Col. M. R. C., U. S. A., chairman in absentia, Boston; Dr. Eugene Pool (Passed President Academy of Medicine, N. Y., and of the American College of Surgeons); Dr. Arthur W. Allen (Chairman Board of Regents American College of Surgeons), Boston; Rudolph Matas (Passed President International Society of Surgery, 1938, Passed President American College of Surgeons), New Orleans.

Dr. Jose Arce, dean of the University of Buenos Aires, is serving as acting president, in the absence of Professor L. Mayer, of Brussels, detained in Belgium by Nazi compulsion.

Until the restoration of peace and order in Europe, and when the war conditions will permit, the society will hold inter-American sessions coincidently with the annual Clinical Congress of the American College of Surgeons.

Dr. Matas, as acting secretary-treasurer of the executive committee, attended the meeting of Delegates and Fellows held in the New York Academy on November 12. Since his return he expressed his satisfaction with the perfect success of the transplantation and reorganization of the society, which was ratified by an act, witnessed by a very distinguished group of the New York Fellows and their Latin-American colleagues.

NEWS ITEMS

The Association of Military Surgeons of the United States, at a luncheon given December 15, 1942, in Washington, D. C., awarded the Gorgas Medal, founded by John Wyeth and Brother, Philadelphia, to Rear Admiral Edward Rodes Stitt, U. S. N., Brigadier-General Jefferson Randolph Kean, U. S. A., and Brigadier-General Frederick Fuller Russell, U. S. A., for distinguished service in Preventive Medicine for Our Armed Forces.

The fifth Annual Congress on Industrial Health this year will be held at the Palmer House in Chicago, January 11-13. A most interesting program has been provided for the three day session. Those interested in industrial health in medicine might well make it a particular point to attend this outstanding meeting.

A joint Committee of the Council on Foods and Nutrition of the American Medical Association and of the Food and Nutrition Board of the National Research Council has published a small booklet entitled "Food Charts: Foods as Sources of the Dietary Essentials." This small booklet can be obtained from the American Medical Association for the price of ten cents. The brochure should be of very great interest to those who are concerned with the problems of nutrition.

Dr. George W. McCoy, Director of Public Health of the Louisiana State University School of Medicine, attended the meeting of the National Foundation for Infantile Paralysis at New York City on December 3, 1942. Dr. McCoy is a member of the Medical Advisory Committee of the National Foundation.

First Lieutenant J. C. Swartzwelder, of the United States Army Medical Corps, formerly Assistant Professor in the Department of Public Health of the Louisiana State University School of Medicine, has been transferred from the LaGarde General Hospital to the 4th Service Command Laboratory at Fort McPherson, Atlanta, Georgia.

The date for the 17th annual meeting of the National Conference on Medical Services has been set for Sunday, February 14. This meeting is held annually in connection with the Congress on Medical Education and Licensure, which is scheduled this year for February 15 and 16. The place of meeting will be the Palmer House, Chicago.

The regular meeting of the Touro Staff was held on Wednesday, December 9 at 8 p. m. There was a clinico-pathologic conference with a discussion by Dr. Arthur Caire. Dr. Howard Mahorner reported on the "Control of Raynaud's Syndrome by Repeated Sympathetic Block." Drs. D. N. Silverman, Friedman, and J. D. Rives discussed "Fibrosis of the Stomach."

The National Society for the Prevention of Blindness announces that a prize of \$250 will be awarded for the most valuable original paper during 1943 adding to the existing knowledge about the diagnosis of early glaucoma. The award will be made by the society with the guidance of an ophthalmological committee composed of Dr. Arnold Knapp, Dr. Manuel Uribe Troncoso and Dr. Mark J. Schoenberg.

SOUTHERN MEDICAL

The full list of the newly elected officers of the Southern Medical Association is given below:

President-Elect: Dr. W. T. Wootton, Hot Springs National Park, Ark.

Vice-President: Dr. Wyndham B. Blanton, Richmond, Va.

Chairman of Board of Trustees: Dr. Frank K. Boland, Atlanta, Ga.

Chairman of Council: Dr. Lucien A. LeDoux, New Orleans, La.

Executive Committee of Council: Dr. Lucien A. LeDoux, Chairman, New Orleans, La.; Dr. Oscar B. Hunter, Washington, D. C., and Dr. Curtice Rosser, Dallas, Tex.

UNITED STATES PUBLIC HEALTH SERVICE

Past Asst. Surgeon W. J. Fitzgerald has been relieved from duty in New Orleans and assigned to

the U. S. Merchant Marine Cadet Basic School, Pass Christian, Miss. Asst. Surgeon Charles N. Fiore and Asst. Surgeon Abraham Jacobs have been ordered to the Coast Guard Headquarters, Eighth Naval District, New Orleans.

AMERICAN COLLEGE OF PHYSICIANS

The Board of Regents of the American College of Physicians has announced the cancellation of their 1943 Annual Session, which was scheduled to be held in Philadelphia, April 13-16, 1943. This action was taken after thoughtful consideration of all factors involved, including an intimation from the Secretary of War and the Office of Transportation that larger national medical groups should not plan meetings at the time set; a growing difficulty in getting speakers and clinicians of top rank to maintain the usual standards of the program; prospect of greatly reduced attendance, because civilian doctors are faced with too great a burden of teaching and practice already; a decreasing active membership, due to approximately 25 per cent of all doctors being called to active military service. President James E. Paullin announced, however, that all other activities of the College would be pursued with even greater zeal, and that the College would especially promote regional meetings over the country and organize postgraduate seminars in the various military hospitals for doctors in the Armed Forces.

ANNOUNCEMENT FOR STATE MEDICAL JOURNALS

An intensive educational program on rheumatic fever and heart disease has been launched by the Metropolitan Life Insurance Company with the cooperation and advice of the American Heart Association, the Academy of Pediatrics, and the Crippled Children's Division of the U. S. Children's Bureau.

The purpose of this activity is twofold. Through popular literature, addresses, radio programs, news releases, and advertisements the public will be acquainted with the newer knowledge of rheumatic fever and rheumatic heart disease and their special war-time significance in overcrowded and insanitary environments. The program will stress the importance of early diagnosis, proper care for rheumatic fever victims, and the declining mortality rate among children in the younger age groups. The Metropolitan is using the services of its Field Staff in some three thousand communities, and it expects to reach over a million homes.

An equally important objective of this program will be to distribute to the medical profession up-to-date literature covering various aspects of the rheumatic fever problem. The printed materials for physicians will include a clinical booklet which sets forth in concise form the modern concept of the disease, criteria for its early diagnosis and treatment, methods of managing the disease and

recognizing its cardiac involvements. This booklet is being developed in collaboration with special committees of the American Heart Association and the Academy of Pediatrics. The membership of these committees include: Drs. T. Duckett Jones and Edward F. Bland of Boston; Arthur C. DeGraff, Ann G. Kuttner, Homer Swift, and A. T. Martin of New York City; Ethel C. Dunham and O. F. Hedley of Washington, D. C.; Hugh McCulloch, St. Louis; and Stanley Gibson of Chicago. Others being consulted include Dr. May G. Wilson, New York City; Dr. Albert Kaiser, Rochester; Dr. David Rutstein, Albany; and Dr. Elizabeth Huse, Washington, D. C.

This program marks the first time that a national educational campaign has been undertaken to reach the general public and the medical profession with rheumatic fever literature, especially prepared according to the needs and interests of each group.

GASOLINE RATIONING

The following memorandum was distributed by the Tarrant County Medical Society of Texas. It has been very generally distributed not only to the local community doctors, but throughout the State of Texas. It is felt worth while calling this bulletin to the attention of Louisiana physicians.

HELPFUL HINTS FOR DOCTORS

Because physicians' services are a public necessity we doctors are to be furnished sufficient gasoline and tires to carry on the various activities of our profession. We are not a "privileged" class. Each and every one must regard the possession of a "C" card as a sacred trust. Let us not forget this for a single minute. Actually and literally you must keep your professional car with you. If the car goes out—you go with it.

When you apply for your "B" or "C" card be sure and list any and all uses to which it is to be put on your request blank. If you ask for additional supplies for your second car be sure that you can control its use. You will be held personally responsible for it same as your professional car.

IF YOU HAVE TWO CARS

Your personal professional car can only be driven 90 miles on non-professional use. If your spare car (other car) has a "B" or "C" card it can be driven only 90 miles for "non-professional" use. If it has an "A" card the whole 240 miles can be driven as you, your wife, or your family see fit.

If your wife drives you to the office in a car bearing a "B" or "C" card the whole trip must be counted part of your 90 miles of non-professional driving. Your car is in non-professional use when driven by anyone but the doctor—an exception being made to a nurse or assistant performing necessary and emergency mission for the doctor.

IF YOU HAVE ONLY ONE CAR

Remember this—if you have only one car you (or anyone else) can only use it for 90 miles of non-professional driving per month if it carries either a "B" or "C" card.

Stay with your car; keep it in your personal possession. Be very sure that your car is not driven while you are at the office. It is not possible for your wife to drive you to the office and then use the car while you work.

It may be hard to break habits that we and our families have developed but you will see that we as no other group will be watched closely by the public. Our Medical Society simply cannot allow any member to bring down suspicion on all the rest of us.

We are on our honor and we are patriotic. We have a job to do and we are going to do it—bravely—courageously—honestly.

Your committee,

Tarrant County Medical Society.

DEPARTMENT OF HEALTH

It is not generally realized to what extent the Laboratory Division of the Louisiana State Board of Health is utilized by the doctors in the State. In the year 1941 the Division examined over 600,000 specimens; in the present year it is estimated that there will be over 1,000,000 specimens sent to the laboratories for diagnostic purposes.

The United States Public Health Service evaluation survey of the Kolmer and Kahn modifications of the Wassermann test shows that the state laboratories rank extremely high in the results obtained in these tests, the presence or absence of syphilis.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

Announcement that the Van Meter Prize would be awarded in 1942 was made on September 10, 1941, and after the Council had decided to call off the 1942 meeting, they decided that the Award should still be made provided the essays were of sufficient merit. Several essays were submitted and the special committee has made its report. The prize goes to Drs. Walter Mann and Charles P. Leblond, from the Department of Radiology and Anatomy of the University of Rochester School of Medicine and Dentistry, Rochester, New York. The title of their essay is "Chemical Transformation of the Iodine Fixed by the Thyroid Gland."

The next two essays received honorable mention, "The Nature of the Disordered Calcium and Phosphorus Metabolism in Thyrotoxicosis and Myxedema" by Dr. John W. Robertson; and, "Liver Changes Occurring in Hyperthyroidism with Special Reference to the Deleterious Effects of Anoxia" by Drs. Munro A. McIver and Eleanor A. Winter.

THE CRITICAL ANTIMALARIAL PROBLEM AND ITS SOLUTION

It is axiomatic that troops cannot operate successfully in endemic malarial areas without an effective antimalarial drug. Malaria is present throughout most of the tropical and sub-tropical world. The extent of operations in these regions is steadily increasing and it is conceivable that they may grow to tremendous proportions within a short period of time.

Ninety per cent of the world's customary sources of quinine was cut off when the Japanese invaded Java and the Philippines. India has in the past frequently imported cinchona bark from Java to bolster her supply. South America has for many years been importing bark from Java for domestic use.

What measures should be taken to safeguard our limited stocks? Early in May the War Production Board recognized the critical nature of the problem. In order to avail itself of medical advice it asked the National Research Council to form a Committee on Drugs and Medical Supplies to investigate and advise not only on the many problems which the quinine scarcity presented, but also on any other matters pertaining to Drugs and Medical Supplies which concerned the War Production Board. This committee has two subcommittees, one on Essential Drugs, the other on Hospital and Surgical Supplies. The Committee has also used the advice of other National Research Council Committees, such as the Subcommittee on Tropical Diseases for answers to specific problems in the therapy of malaria, and the Committee on Surgery for technical problems related to surgical supplies.

The program worked out by the joint efforts of the War Production Board and the National Research Council progressed as follows:

1. The War Production Board issued "Quinine Order M-131" which froze present stocks and restricted the use of quinine and other cinchona alkaloids to the treatment of malaria, except that quinidine could also be used for the treatment of cardiac disorders. Requests for quinine for the treatment of various other conditions including quinine, urethane and quinine urea as local anesthetics, quinine in sodium morrhuate for varicose vein injections, quinine salts for induction of labor, quinine salts in the treatment of night cramps, multiple sclerosis, amyotrophic lateral sclerosis, myotonia atrophica, paralysis agitans and myotonia congenita, have all been carefully considered and denied with the exception of the use of quinine in the treatment of myotonia congenita.

2. Repeated persuasive efforts in the trade press have been instituted by the War Production Board to bring in all unopened packages of quinine, and now the machinery is being set up for bringing in opened packages, analyzing each and pooling according to the type of preparation.

3. To effect the maximum antimalarial value of available cinchona bark from South America, the National Research Council undertook to investigate the feasibility of substituting totaquine for quinine in the treatment of malaria. Totaquine had been recognized previously by the U. S. Pharmacopoeia, and a standard set which appears in the 12th Edition. This standard seemed to allow for too much latitude both in quinine content and in total crystallizable alkaloid content. Accordingly, the National Research Council asked the U. S. Pharmacopoeia to revise the monograph to obtain a more uniform standard. As the result the U. S. Pharmacopoeia adopted the following monograph which will appear in a supplement of the 12th Edition.

"Totaquine is a mixture of alkaloids from the bark of *Cinchona Succirubra* Pavon and other suitable species of *Cinchona*. It contains not less than 7 per cent and not more than 12 per cent of anhydrous quinine, and a total of not less than 70 per cent and not more than 80 per cent of the anhydrous crystallizable cinchona alkaloids, the designation "crystallizable alkaloids" referring to cinchonidine, cinchonine, quinidine, and quinine.

"Totaquine of a higher quinine percentage may be reduced to the official quinine standard by a mixture with Totaquine of a lower percentage, or with any of the diluents permitted for powdered extracts under Extracta, page 174, provided the total anhydrous crystallizable cinchona alkaloids do not fall below the required percentage.

"The National Research Council recommended the dose to be 10 grains three times a day for 7 days."

It was the considered opinion of the Subcommittee on Tropical Diseases, and the Committee on Medicine of the National Research Council, that in this dosage totaquine should prove to be as effective as quinine sulfate in the oral treatment of malaria. A satisfactory price structure has been set up for cinchona bark from South America by the Board of Economic Warfare, and every effort is being made to stimulate importation.

4. The production of atabrine has been stimulated by the War Production Board, and the present outlook on production sufficient to supply all anticipated needs is practically assured. Extensive chemical, pharmacological and clinical investigations have been conducted by various groups of the National Research Council working under grants by the Office of Scientific Research and Development. The chemical studies have adequately demonstrated the chemical purity of the atabrine produced in this country. Pharmacological and clinical investigations have revealed temporary gastrointestinal disturbances in a variable percentage of persons receiving atabrine in the suppressive (prophylactic) treatment of malaria. Further study is under way to elucidate the cause and remove if possible these disturbances. There is a tendency to the development of a yellow pigmentation of the skin during administration which disappears after

the drug is stopped. This is harmless and not associated with any disturbance in liver function.

5. Experience with the use of atabrine by the British both therapeutically and as a suppressive, indicates that it is an effective antimalarial and in some ways superior to quinine. It is slower in action, and therefore not as useful in the initial treatment of malaria, but after one to three days of quinine therapy atabrine is exceedingly effective. At a recent meeting of the Subcommittee on Tropical Diseases of the National Research Council, the following program of dosage was endorsed as an efficient routine of therapy:

(1) *Combined QAP treatment.* (Method of choice.)

(a) *Totaquine or quinine sulphate*, 0.64 gram (10 grains) three times daily after meals for 2 or 3 days, until pyrexia is controlled. Then give

(b) *Atabrine*, 0.1 gram (1½ grains) three times daily after meals for 5 days. Then after 2 days without antimalarial medication give

(c) *Plasmochin*, 0.01 gram (3/20 grain) three times daily after meals for 5 days, except for the debilitated patient, who should receive only two doses daily. (Discontinue if toxic symptoms occur. Never give atabrine and plasmochin concurrently.)

(2) *Atabrine-plasmochin treatment.* (May be used for simple vivax infections and in other infections when no totaquine or quinine is available.)

(a) *Atabrine*, as above for 7 days. Then, after 2 days without antimalarial medication, give plasmochin, 0.01 gram three times daily for 5 days, as above.

(3) *Totaquine or quinine-plasmochin treatment.* (Method when no atabrine is available.)

(a) *Totaquine or quinine sulphate*, as above, for 7 days, during the last 5 of which accompany each dose of totaquine or quinine with plasmochin, 0.01 gram three times daily.

(4) *Suppressive treatment.* a. *Atabrine.* Give 0.1 gram (1½ grains) twice daily after meals on two days a week, allowing a 2 or 3 day interval between days of medication.

It was the consensus of this Subcommittee that until we have had more experience with the use of atabrine it should be used only under the guidance of a physician or public health officer.

6. Government stockpiles have been recommended not only for quinine but the other alkaloids, (cinchonine, cinchonidine and quinidine) and totaquine, and the Defense Supplies Corporation is purchasing against these stockpile recommendations.

It is anticipated on the basis of recent investigations by the Board of Economic Warfare that the barks from South America of low quinine content but sufficiently rich in total crystallizable alkaloids (quinine, quinidine, cinchonine, cinchonidine) to make totaquine of U. S. P. standards, will be found in sufficient quantity to enable totaquine to replace civilian quinine requirements. The amount of this bark which is available has been an unknown fac-

tor, because its low quinine content has not made it previously marketable.

If every physician in civilian practice and every public health officer will follow the recommendations of the Subcommittee on Tropical Diseases regarding the use of atabrine and will use totaquine in place of quinine whenever totaquine is available, an important and material conservation in our limited stocks of quinine will be accomplished.

Lewis H. Weed, M. D.

Chairman, Division of Medical Sciences
National Research Council

UROLOGY AWARD

The American Urological Association offers an annual award "not to exceed \$500" for an essay (or essays) on the result of some specific clinical or laboratory research in Urology. The amount of the prize is based on the merits of the work presented, and if the Committee on Scientific Research deem none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years.

The selected essay (or essays) will appear on the program of the forthcoming meeting of the American Urological Association, May 31-June 3, 1943, Hotel Jefferson, St. Louis, Missouri.

Essays must be in the hands of the secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee, on or before March 1, 1943.

The Bureau of the Census, Department of Commerce, reports that there were 124 deaths in the City of New Orleans for the week which ended November 14, divided 78 white and 46 negro, with eight of these deaths occurring in children under one year of age. There was quite a considerable increase in the number of deaths the next week which ended November 21, there being 146 deaths reported in the city, 78 white, 68 colored, and 21 in small babies. The week finishing November 28 found 136 deaths occurring in the city, 81 of which were white people and 55 in the negro race, with 11 infantile deaths. There was quite a sharp increase in the number of deaths in the city in the week which closed December 5. The 164 deaths were divided 108 white and 56 negro. The increase in this week can be largely attributed to the deaths in the white population, as the negro number of deaths was stationary. Fifteen of the 164 deaths were infants under one year of age. It is interesting to note that so far this year there were over 404 less deaths in the City of New Orleans than last year, which in turn was an extremely healthy year. This same state of affairs exists all over the country. The death rate and the morbidity rate throughout the United States, fortunately for

our great country, are smaller than they have ever been before in the history of the country.

INFECTIOUS DISEASES IN LOUISIANA

The Section of Epidemiology of the Louisiana State Board of Health shows that for the week ending November 14 there were reported the following diseases in numbers greater than 10: 238 cases of syphilis, 98 of gonorrhea, 27 of pulmonary tuberculosis, 18 of chancroid, 12 of diphtheria, and 10 of scarlet fever. This is really a very remarkable report, for if the venereal infections are excluded, only three diseases occurred in this state in figures of 10 or more. During this week there were two cases of malaria reported, three of typhus fever, and one of meningitis. The week which terminated on November 21 finds 364 cases of syphilis listed, 195 of gonorrhea, 44 of pulmonary tuberculosis, 13 of diphtheria, 11 of mumps, and 10 of influenza. Jackson Parish this week reported nine cases of malaria, and there were two cases of typhus fever reported, one from Acadia and one from Caddo Parish. Nearly all of the cases of gonorrhea were reported from army camps, but only 51 of the 364 cases of syphilis. For the week which closed November 28 syphilis had risen to 342, gonorrhea 136, pulmonary tuberculosis 23, and chancroid 15. This is even a more remarkable morbidity report than that of two weeks previous, because tuberculosis alone was the only non-venereal infectious disease which was reported in which there were more than 10 cases. No patients with malaria were found in the state that week, only one case of typhoid fever, and none of the unusual diseases. For the week which came to an end December 5, there were listed 340 cases of syphilis, 185 of gonorrhea, 23 of pulmonary tuberculosis, 17 of mumps, 13 of chancroid, and 12 of food poisoning. There were six cases of typhus fever reported this week, and two of meningococcus meningitis. There were only three cases of typhoid fever in the state.

THE NEW DRUGS OF THE U. S. P. XII

Since the last Supplement to the U. S. P. XI was issued certain drugs have been adopted by interim revision in order to meet an immediate need for such official recognition. These drugs, although in the U. S. P. XII, are not listed as additions, inasmuch as technically they are already official. They are as follows:

Aleovitamin A and D; Insulin Injection; Oil of Cedar Leaf; Persic Oil.

Additions to the U. S. P. XII:

The very extensive list of new monographs in the U. S. P. XII is due to the addition of a rather comprehensive list of therapeutic substances as well as the new policy of recognizing some suitable dosage form for each therapeutically useful drug. An abbreviated list of only those substances classified as new drugs follows:

Acidum Aminoaceticum; Aethylis Carbamas (Urethane); Amaranthum; Amyleni Hydras (Tertiary Amyl Alcohol); Aqua pro Injectione; Ben-tonitum ("Wilkinit"); Butacinae Sulfas; Butylis Aminobenzoas ("Butesin," "Benzocaine," "Anes-thesin"); Calci Mandelas ("Camelate Tablets"); Calx Sodica; Carbarsonum; Carbasus Absorbens (Gauze, Plain Gauze, Non-sterilized Absorbent Gauze); Carbasus Absorbens Adhaesivus (Adhe-sive Absorbent Compress); Carbasus Absorbens Sterilis (Sterile Gauze); Chloroazodinum ("Azo-chloramide"); Chorda Serica Chirurgialis (Silk Sutures); Chorda Serica Chirurgialis Sterilis (Sterile Silk Sutures); Dihydromorphenoni Hydro-chloridum ("Dilaudid"); Diphenylhydantoninum Sodicum ("Dilantin Sodium"); Emplastrum Ad-haesivum Sterile (Sterile Adhesive Tape); Ergo-novinae Maleas ("Ergotrate Tablets," Ergome-trine, "Basergin Tablets"); Ergotaminae Tartras ("Gynergen"); Estradiolis Benzoas ("Progynon-B," "Dimenformon Benzoate"); Estronum (Thee-lin); Eucatrophae Hydrochloridum ("Euphthal-mine Hydrochloride"); Extractum Perpolitionum Oryzae (Extract of Tikitiki, Extract of Rice Bran, Extracto de Salvado); Ferri Sulfas Exsiccatus; Gelatum Alumini Hydroxidi (Colloidal Aluminum Hydroxide) ("Amphojel," Creamalin"); Gelatum Alumini Hydroxidi Siccum ("Amphojel Tablets"); Globulinum Immune Humanum (Measles Propy-lactic, Placental Extract); Glycerylis Triacetat (Triacetin); Hexylresorcinol ("Crystoids Anthel-mintic"); Injectio Digitalis (Digitalis Ampuls); Injectio Mercurophyllinae ("Mercupurin"); Liga-mentum Carbasi Absorbens (Roller Gauze Band-age); Liquor Chloridum Trium Isotonicus (Ringer's Solution); Liquor Chloroazodini (Azo-chloramide in Triacetin); Liquor Iodi; Liquor Sodii Citratis Anticoagulans; Liquor Tribromoae-thanolis (Solution of Tribromoethyl Alcohol); Magnesii Trisilicas; Menadionum (2-Methyl-naph-thoquinone; 2-Methyl-1, 4-naphthoquinone) ("Kay-quinone," "Proklot," "Thyloquinone"); Mersalyl ("Injectio Mersalylis et Theophyllinae"); Nebula Epinephrinae Hydrochloridi; Neostigminae Bro-midum; Neostigminae Methylsulfas ("Prostigmine Bromide," "Prostigmine Methylsulfate"); Nicotin-amidum (Nicotinic Acid Amide, Niacinamide); Oleum Hippoglossi; Ouabainum (G-Strophanthin); Pamaquinae Naphthoas (Aminoquin Naphthoate) ("Plasmochin"); Perpolitiones Oryzae (Rice Pol-ishings); Plasma Humanum Normale Citratum (Normal Human Plasma); Quinacrinae Hydrochlo-

ridum (Mepacrine Hydrochloride) ("Atabrine"); Riboflavinum (Lactoflavin, Vitamin B₂, Vitamin G); Serum Humanum Normale (Human Serum); Serum Immune Morbillo Humanum (Measles Convalescent Serum); Serum Immune Scarlatinae Humanum (Scarlet Fever Convalescent Serum); Sulfapyridinum; Sulfapyridinum Sodicum Sterile; Sulfarsphenamina; Sulfathiazolum; Sulfobromoph-thaleinum Sodicum ("Bromsulphalein Soluble"); Syrupus Glycyrrhizae; Tetracinae Hydrochlori-dum ("Pontocaine Hydrochloride"); Tetrachloroae-thylenum (Perchloroethylene, Ethylene Tetrachlo-ride) ("Nema"); Theobromina et Sodii Acetas ("Agurin"); Totaina ("Quinum Quinetum"); Toxoidum Tetanicum; Tribromoethanol ("Aver-tin Crystals"); Trichloroethylenum; Unguentum Aethylis Aminobenzoatis; Urea (Carbamide).

WOMAN'S AUXILIARY

Louisiana State Medical Society

This month we are featuring the activities of two of our North Louisiana Auxiliaries, Caddo and Ouachita. Both are busy groups, doing worthwhile things as you may judge from the following:

Mrs. J. M. Bodenheimer of Shreveport tells that the Caddo programs this year are being prepared and presented by Auxiliary members instead of outside talent. In October "We Are On the Air" was the subject given, and it outlined the activities of the Auxiliary since its inception 14 years ago. In November the Program Committee presented "The Medical Auxiliary in War Work," which showed that practically every member is engaged in some form of War work. That is a splendid showing. Special honor was paid to their men in Service at this meeting, too.

This month the Shreveport Medical Society and the Auxiliary are giving a Christmas party for soldiers at the U. S. O., instead of the usual party they have for themselves at this time. That is a fine thing to do, don't you think? And the group is continuing their educational work through the sale of Tuberculosis Seals and Hygeia. They sponsor a Toy Loan Library at Charity Hospital.

Mrs. A. G. McHenry of Monroe reports from the Ouachita Auxiliary. In November the State Presi-dent, Mrs. Clarence B. Erickson, was the guest speaker at the business session and afterwards was tendered a beautiful luncheon by the members.

In December Dr. Charles R. Gowan of Shreve-port gave an interesting and informative talk on Progress made in Tuberculosis Work. Excellent reports were given by the chairmen of Hygeia, Red Cross and Christmas Seal Sale. Mrs. W. C. Simp-son reviewed an article from the Bulletin.

The Auxiliary voted to cooperate with the Christ-mas present program of the U. S. O., and Mrs. A. G. McHenry, Mrs. G. B. Wilkins and Mrs. R. E. Stevison were appointed to serve on the committee to help with that work. Another group composed

of Mrs. E. G. Calvert, Mrs. H. V. Collins and Mrs. C. P. Gray was appointed to decorate a Christmas Tree at Conway Hospital.

Eighteen members and Dr. and Mrs. Charles Gowan of Shreveport, guests, attended this very fine meeting.

Thank you very much, Caddo and Ouachita, for

telling us what you are doing. You inspire the rest of us to greater efforts.

And now, may 1943 bring a brighter day to our distressed world. And may we, as Auxiliary Members be given greater strength and greater will to do a greater part in hastening that day of Peace.

MRS. JAMES W. WARREN, Chairman,
Press and Publicity.

BOOK REVIEWS

Intestinal Obstruction: By Owen H. Wagensteen, B. A., M. D., Ph. D. 2d ed. Springfield, Ill., Chas. C. Thomas Co., 1942. Pp. 484, illus. Price \$7.00.

Published in its second edition the author has endeavored to bring the subject of intestinal obstruction up to date in this work. In reviewing this book one can readily see that the literature has been well considered and all of the worth while data included.

Many major additions have been inserted since the first edition in 1936, and as stated by the author in the preface: "The plan of this edition is more natural and the scheme employed for the discussion of the subject is under four distinct sections which are: (1) Effects of Obstruction; (2) General Diagnostic Considerations in Recognition of Bowel Obstruction; (3) General Therapeutic Considerations in Its Management; (4) Special Obstructions." There are twenty-five chapters and 143 figures. The references are systematically arranged at the end of each chapter.

The subjects discussed are many, such as the importance of swallowed air in distention, the use of the Miller-Abbott tube, closed aseptic resection, and the use of sulfonamides in treatment of peritonitis. The author has also stressed the idea of linking the clinical with the x-ray evidence in the diagnosis of obstruction. One who wishes to practice modern medicine or surgery should be acquainted with this work.

EMILE BLOCH, M. D.

Methods of Treatment in Postencephalitic Parkinsonism: By Henry D. von Witzleben. New York, Grune & Stratton, 1942. Pp. 164. Price, \$2.75.

This well arranged volume dealing with the methods of treatment in postencephalitic Parkinsonism with preface by Theodore J. C. von Storch is one of great interest and instruction to our present therapy of illnesses mentioned therein.

The volume is substantially bound and in turn there are interpretations and explanations of the twelve chapters following the introduction and preface. It is interesting to note the evaluation of the various forms of treatment given to the originators of these treatments; likewise, the recognition of experimentation done in the various fields

of pharmacology, chemistry and biochemistry referable to the illnesses mentioned.

It is interesting also to read of the various forms and types of therapy that have been used in times past in attempting a cure or administering a measure for the relief of one of the most uncomfortable series of illnesses met within mankind.

The bibliography, complete in all details and up-to-date, would display the fact of the painstaking efforts on the part of the author to incorporate for our benefit all minute medical information which would aid us in making life pleasanter for the patient.

The book is easy to read, printing is standard and clear and should be used as a vade mecum for the general practitioner as well as the neuro-psychiatrist.

The volume is affectionately dedicated to the memory of the late Constantin Baron Von Economo and to Felix Stern.

WALTER J. OTIS, M. D.

Medical State and National Board Summary: By William H. Kupper, M. D., with a foreword by Earl S. Hallinger, M. D. Patterson, New Jersey, The Colt Press, 1942. Pp. 369. Price, \$4.50.

In this small volume the author has made available a great deal of practical information pertaining to the fundamental principles of the science of medicine which ordinarily occupy many much larger volumes. In the preface the statement is made that "this condensation has been made possible by means of illustrations, by eliminating repetitions and by the use of a compact style of presentation."

The chapters on anatomy and biochemistry are illustrated by easily interpreted drawings and diagrams, and at the end of each of the eleven chapters on pre-clinical and clinical subjects two pages are devoted to questions and answers. Normal and disease conditions are described under each heading, together with methods and special technics in diagnosis. Treatment of the more common disorders is mentioned briefly.

Several pages are devoted to National Board questions and answers. Three pages summarize briefly the history of medicine.

The chapter on National Board questions alone will prove "an oasis in the desert" to the bewildered and perplexed state or national board applicant. The reviewer would highly recommend Dr. Krupper's book to the physician in general practice, to the specialist who confines much of his reading to his own specialty and to the medical student in need of a handy, inexpensive summary of information on subjects that confront him daily.

ELIZABETH BASS, M. D.

Stedman's Practical Medical Dictionary: By Stanley Thomas Garber, B. S., M. D. 15th ed. rev. Baltimore, Williams & Wilkins Co., 1942. Pp. 1257. Price, \$7.50.

Stedman's Medical Dictionary is too well known to the medical profession to need any complimentary or commendatory remarks. It has gone through fifteen editions and now is under the aegis of Dr. Stanley T. Garber. As a medical dictionary the volume is all that could be desired. The reviewer has used the dictionary for many years and it has never failed him. He has reviewed most flatteringly new editions for the last twenty years. This time the reviewer offers no criticism nor unfavorable comment on the dictionary as such but he does criticize vigorously the new font most emphatically. It is only with the greatest difficulty that the reader moves from the sharp black-faced type to a type which is very small not only in size but in thickness. It is truly almost a task to make use of the dictionary because of this change which the publishers or the editor seemed to think would be an advance in the art of typography.

J. H. MUSSER, M. D.

The Toxemias of Pregnancy: By William J. Dieckman, M. D. St. Louis, C. V. Mosby Company, 1941. Pp. 521. Illus. pl. Price \$6.50.

This excellent monograph contains 500 pages, with 50 illustrations and three colored plates. It is divided into six sections. The first section of 56 pages considers the classification, incidence and pathology of the toxemias of pregnancy. The second section of 166 pages under the general heading "Normal and Abnormal Physiology" includes physiochemical determinations, blood pressure, renal physiology; the anatomy, physiology and pathology of the liver; the ocular system, the placenta, the endocrines and finally edema in pre-eclampsia and eclampsia. Section three contains 47 pages and considers the etiology of eclampsia and includes a discussion of those factors influencing eclampsia. Section four (89 pages) deals with the clinical aspects of the toxemias of pregnancy, and section five (88 pages) with treatment. The final section, six (52 pages), is devoted to maternal and fetal prognosis and prenatal care.

Dieckman has contributed extensively to the literature in the field of toxemias of pregnancy, hav-

ing done a large amount of original research. This work includes not only the results of his own investigations but those of others, including frequent and liberal quotations. The author shows a mastering of the subject and a complete familiarity with the literature and investigations of others, and while much of the material is familiar to those who have followed recent literature it is well organized, thoroughly digested and ably presented.

The author states that he has a dual purpose in writing this book, first "to acquaint the obstetrician with some of the recent contributions on physiology pertaining to obstetrics" and secondly "to acquaint the investigator, untrained in obstetrics, with some of the physiology and pathology of obstetrics." He succeeds to a considerable degree in both of his aims. This book should be carefully read by everyone interested in obstetrics and the toxemias of pregnancy and kept at hand as a ready, valuable reference.

B. B. WEINSTEIN, M. D.

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The second edition of the Directory of Medical Specialists does credit to those who compiled it. Any directory of this kind represents a tremendous amount of work and a detailed investigation. The editor has done his task well.

The directory can be recommended to the medical profession as a whole without reservation. It will prove of inestimable value to those who wish to refer patients to qualified specialists either in their own city or in cities elsewhere throughout the United States.

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SYMPOSIUM ON TUMORS OF CENTRAL NERVOUS SYSTEM*

THE PATHOLOGY OF TUMORS OF THE NERVOUS SYSTEM

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Numerous remarkably consistent statistical studies have borne out the fact that intracranial tumors occur in approximately 1 per cent of all autopsies; higher figures have been reported from hospitals which feature a neurologic service. It is therefore imperative that the clinician should have a working knowledge of the natural history of these neoplasms. Because the clinical course, the operability and the prognosis vary greatly for different types, the diagnosis of "brain tumor" alone is insufficient. It should also include the probable localization of the lesion and the probable variety of the tumor.

Before individual tumor types can be discussed, a classification must be adopted. The following classification, admittedly incomplete, is offered because of its simplicity. It is based on the primary site of the neoplasm and a common example is cited for each tissue involved.

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TUMORS OF THE NERVOUS SYSTEM

Primary Site	Example
A. Brain and Spinal Cord Parenchyma	
1. Primary.....	Glioma
2. Secondary.....	Metastasis
B. Sheaths of Nervous System	
1. Meninges.....	Meningioma
2. Cranial nerves.....	Acoustic neuroma
3. Spinal nerves.....	Neurofibromatosis
C. Sympathetic System.....	Neuroblastoma
D. Hypophysis.....	Adenoma

TUMORS ARISING IN BRAIN AND SPINAL CORD PARENCHYMA (PRIMARY)

The most important and least understood group of tumors involving the nervous system are those which arise primarily in the parenchyma of the brain and spinal cord. By far the greater proportion of these are the gliomas. Of all intracranial tumors, 40-50 per cent are gliomatous in type. With one possible exception, any cell element within the brain or spinal cord may be the origin of neoplastic change; it has not been proved that any tumor arises from the microglia. The terminology of the gliomas most widely accepted is that which is based on neurohistogenesis. In the following table, the individual types of primitive and adult cells which have been described in the nervous parenchyma are listed. The tumor corresponding to the individual cell is also given. In addition to the elements listed below, tumors may also arise from the blood vessels; various congenital neoplasms may also occur in the nervous system.

NEUROHISTOGENETIC ORIGIN OF GLIOMAS

Neurohistogenetic Origin

A. Primitive cells	Corresponding Tumor
1. Medullary epithelium.....	1. Medulloepithelioma
2. Medulloblast.....	2. Medulloblastoma
3. Spongioblast.....	3. Polar spongioblastoma
4. Astroblast.....	4. Astroblastoma
5. Oligodendroglioblast.....	5. Oligodendroglioblastoma
6. Pinealoblast.....	6. Pinealoblastoma
B. Primitive and adult cells	
7. All types.....	7. Glioblastoma multiforme

C. Adult cells

8. Astrocyte	8. Astrocytoma
9. Oligodendroglia	9. Oligodendroglioma
10. Ependyma	10. Ependymoma
11. Ganglion cells	11. Ganglioneuroma
12. Pineal cells	12. Pinealoma
13. Choroid plexus	13. Papilloma
14. Microglia	14.

In regard to the etiology of gliomas, essentially the same theories have been advanced to explain their origin as for any of the systemic neoplasms. As far as is known, color, race and sex have little to do with the development of gliomas. That trauma can initiate the growth of a glioma is doubted by most; that it may alter the rate of growth or even cause the appearance of symptoms seems a much more likely possibility. Age is an important factor and will be discussed under individual tumors.

Because of their location in the brain, all varieties of gliomas are capable of causing death, although in approximately one-half, the microscopic appearance is that of a benign tumor. A peculiar characteristic of this tumor group is that they apparently do not metastasize to the systemic organs as long as they arise in the brain and spinal cord. However, closely related tumors which arise in the peripheral nervous system or in the sympathetic system may metastasize rapidly and widely. For example, the neuroblastomas which arise in the sympathetic system are among the most malignant of all tumors; they spread widely and early. The medulloblastoma of the cerebellum, which is considered to be a closely related tumor, has never been shown to metastasize outside of the central nervous system. That intracerebral and intraspinal gliomas do not metastasize to systemic organs has been explained by the lack of lymphatic channels in the brain and spinal cord and by the fact that gliomas show no tendency to invade the lumens of the blood vessels.

Certain of the gliomas are capable of metastasizing within the intracranial and intraspinal cavities. The most common of these are the medulloblastomas, the glioblastoma multiforme type, the ependymomas and the pinealomas. The first two varieties do so by spreading either by way of

the perivascular spaces or by direct extension into the subarachnoid space. The latter two types are more apt to grow into the ventricular cavities. Particles of tumor tissue break loose and float in the cerebrospinal fluid, attaching themselves at some distant point, such as the cauda equina. Such metastatic lesions are responsible for those cases which clinically show both an upper and a lower motor neuron syndrome. Certain of the gliomas may be multiple; in order to explain these on a basis other than that of a simultaneous growth of multiple tumors, it has been suggested that these are instances of intracerebral metastases.

Many of the gliomas are quite rare and little will be said of these. The glioblastoma multiforme group and the astrocytomas make up the vast majority; along with the medulloblastomas, they compose over 50 per cent of all gliomas.

The medulloepithelioma is extremely rare, fortunately, because it is the most malignant of the group. The medulloblastoma, however, is quite common, composing from 10 to 20 per cent of all gliomas. It usually occurs in infants and young children. When it does occur in such patients, its location is almost always in the midline of the cerebellum. Should it occur in an adult, it usually is located in the lateral portion of the cerebellum or in the cerebrum. Its clinical course is rapid, death usually occurring in one year or less. This rapid growth is partly due to the fact that the medulloblastoma grows very rapidly and partly due to the location of these tumors. Being in the midline of the cerebellum it is in a position to produce early obstruction of the flow of cerebrospinal fluid with resultant hydrocephalus. As has already been stated, these tumors commonly metastasize within the intracranial and intraspinal cavities. Grossly medulloblastomas appear as solid but soft, reddish grey tumors. They often seem to be encapsulated but, like all other gliomas, are always actively invasive. They are very vascular but hemorrhages and areas of degeneration are rare. They produce symptoms by compression and displacement of the medulla oblongata and

pons, and by the production of a hydrocephalus. In addition, the tumor tissue or the tonsils of the cerebellum may herniate through the foramen magnum.

The characteristic cell of the medulloblastoma is the medulloblast. It is a very small cell with scanty cytoplasm. The nucleus is oval or round in shape and contains a heavy chromatin network. Mitoses are frequent. The tumor is very cellular in character, the cells tending to be arranged around small spaces filled with an amorphous material (pseudo-rosettes). Many thin walled vascular channels are present. The connective tissue stroma is minimal in amount. Because this type cell is a primitive one, these tumors are very sensitive to roentgentherapy, in fact, the most sensitive of any glioma.

The glioblastoma multiforme variety composes approximately one-third of all gliomas. It differs in its characteristics from the medulloblastomas in several ways. It is far more common in adults than in children, most commonly being found in patients in the fifth decade. Its favorable site is the white matter of the hemispheres. The clinical course is rapid, death occurring on the average one year after the onset of symptoms. They are only slightly radiosensitive. Grossly these tumors usually appear as large non-encapsulated neoplasms filling one or more lobes of the hemispheres and often extending into the subarachnoid space overlying it. Metastases may occur to the spinal cord and often similar tumor masses are present in both hemispheres at once. They may extend across from one hemisphere to the other by way of the corpus callosum. These tumors are exceedingly vascular, many of the vessels being thrombosed. The center of these tumors contains many red, yellow, brown, grey and white areas due to hemorrhage and softening of various ages and sizes. It has been customary to credit these hemorrhages and infarctions with the sudden onset and episodic clinical courses characteristic of these tumors. Small cysts are not uncommon. The tumor is usually surrounded by a large

zone of severe parenchymal edema and actual softening may occur.

The tumor derives its name from the microscopic appearance, being characterized by cells showing extreme variation in size, shape and staining ability. Nearly every type of glia element may be found in these tumors. Besides these, numerous multinucleated giant cells are characteristic. Mitoses are common. The vascularity is increased and many of the vessels show endothelial proliferation; some are thrombosed. The tumor is quite cellular except in areas where necrosis has occurred; the cells are often arranged around these necrotic areas in a pseudo-palisade fashion. Evidence of old and recent hemorrhage is common.

The polar spongioblastomas occur infrequently but merit some attention because they usually occur in regions which are inaccessible to operative procedures. They are most commonly found within the brain stem or along the optic tracts. Their age incidence is usually in adolescents and young adults. The clinical course is slow, averaging four years. They are resistant to roentgentherapy. They do not metastasize. Even though located in the brain stem adjacent to the aqueduct of Sylvius, the rate of growth is so slow that hydrocephalus is rare until late in the course of the illness. These tumors may be associated with peripheral neurofibromatosis. Grossly they appear as grey avascular firm tumors; their color makes it difficult often to identify the margin of the tumor. Cyst formation is rare; occasionally calcium deposits may be present. Microscopically the tumor is made up of spongioblasts, bipolar or unipolar elongated cells with oval nuclei containing abundant chromatin. The cells have a tendency to lie parallel to each other. Mitoses are rare.

ADULT TYPE OF CELL

The astroblastomas are tumors which have many of the characteristics of the glioblastoma multiforme and also of the more mature astrocytoma, being considered by many to be a stage between these two tumors; they are quite rare. The astrocy-

tomas occur with approximately the same frequency as do the glioblastoma multiforme variety. They are most commonly seen in cerebral hemispheres of adults. If they do occur in children, they usually do so in the lateral portion of the cerebellum. These tumors grow very slowly, the usual duration of symptoms being six years. They are not radiosensitive. Calcium deposits may show on x-rays of the skull. The cut surface of the astrocytoma is grey in color and smooth; it may be soft or quite firm and rubbery. Its margins blend imperceptibly with the surrounding brain tissue. Very frequently these tumors are cystic. Only a small portion of tumor tissue may surround these cysts. Often a small mural nodule is the only tumor tissue which is present. The cyst is filled with a straw-colored or orange fluid which coagulates on removal. After removal of the fluid by aspiration, the cyst rapidly refills itself. Hemorrhages are rare.

Astrocytomas are divided into two main types, depending on whether the type cell is a fibrous astrocyte (fibrous astrocytoma) or whether it is of the protoplasmic type (protoplasmic astrocytoma). Except for the difference in cell type, these variations present no worthwhile pathologic or clinical differences. The essential difference in these two cell types is that the former has numerous fibers and scanty cytoplasm while the latter has abundant cytoplasm and few fibers. With special stains, it can be seen that these astrocytes characteristically have one process on each cell which attaches to the vessel wall by a sucker-foot. The processes often seem to form a glial wall about the vessels. The vessels themselves are not greatly increased in number nor do they show much alteration in their walls. Areas of necrosis and hemorrhage are rare. Mitoses are infrequent.

Other types of gliomas are not frequent. The oligodendrogliomas are tumors of adult life, usually occurring in the hemispheres. They are benign tumors, growing very slowly (average six years). In these tumors, x-rays of the skull often reveal the

presence of calcium deposits. Grossly they appear as firm reddish grey tumors which often seem to have a sharp margin. The type cell is the oligodendroglia cell. These are small cells with scanty cytoplasm and round nuclei showing a heavy chromatin network. They have a few very short fibrous processes; mitoses are rare. Hemorrhage and necrosis are uncommon.

The ependymomas occur along the walls of the ventricles, especially the fourth ventricle. They are slow growths. They cause symptoms mainly by obstructing the flow of cerebrospinal fluid. At times these may act like a ball-valve, causing symptoms referable to an intermittent hydrocephalus. For instance, in the early stages, the patient may have headache only when the erect position is assumed. A further diagnostic point is that ependymomas are practically the only tumors, occurring in the lateral ventricle of children, which show calcium deposits by x-ray. Although these tumors are among the rarer cerebral gliomas, they are the most common glioma found in the spinal cord.

BRAIN AND SPINAL CORD TUMORS (SECONDARY)

Metastasis to the brain from malignancy of distant origins is quite common. Statistical studies have indicated that these make up approximately 20 per cent of intracranial neoplasms which occur in a general hospital. This figure may be even higher because such metastases frequently present no signs or symptoms. In many instances, the patient presents himself with his complaint directed to the cerebral lesion. These observations bring out the fact that all patients diagnosed as having brain tumor deserve a careful systemic examination, including x-rays of the chest. Grant, in reviewing this subject, stated that metastases from carcinoma were much more common than from sarcomas. However, he pointed out also that this was the result of systemic carcinomas being more common than sarcomas and that actually a higher percentage of sarcomas metastasized to the brain. Certain malignancies metastasize frequently to the intracranial cavity when they arise in certain organs but the same type of tumor

when located in other organs may do so rarely. For example, carcinomas arising in the breast and lung have a high percentage of intracranial metastases while metastasis from gastric carcinoma is infrequent. Of the sarcomas, the melanomatous variety furnishes approximately half of the intracranial metastases. These metastases may be located in any portion of the nervous system but usually are found in the cerebral hemispheres. They may be spread diffusely throughout the subarachnoid space ("diffuse leptomeningeal carcinomatosis"). In the brain, they may be represented as one large single tumor mass, as multiple small nodules or as many small microscopic perivascular tumor accumulations. The left side of the cerebrum is said to be involved more frequently than the right; such is explained on the basis that the left hemisphere, being of more physiologic importance, receives a better blood supply. The greater number of vessels offers more opportunity for blood borne tumor emboli to reach the left hemisphere. Once a cerebral metastasis has occurred, death usually occurs within several months. The nervous system may be involved by direct extension of neighboring malignancy. Examples of such are nasopharyngeal carcinomas and neoplasms of the bones and soft parts about the spinal cord.

NERVOUS SYSTEM SHEATH TUMORS

The brain, cranial nerves, spinal nerve roots and peripheral nerves are all surrounded by sheaths and tumors may arise from any of these structures. Sheath tumors make up approximately 15 to 20 per cent of intracranial tumors, a much lower incidence than that of the gliomas. In contrast, sheath tumors compose 75 to 80 per cent of tumors found in the spinal canal and cord; the gliomas here play a relatively smaller role. All of these tumors produce symptoms by compression of the nervous tissue. They may cause alterations in the overlying bone or, if properly located, may cause obstruction of the flow of cerebrospinal fluid.

Of these tumors, the meningiomas are the most frequent type, composing approx-

imately 10 to 15 per cent of intracranial neoplasms. Most commonly, they are seen in patients from 30 to 40 years of age. In location they may be found anywhere within the intracranial or intraspinal cavities. Their sites of predilection are along the superior longitudinal sinus, the undersurfaces of the frontal lobes and along the sphenoid ridges. By far, the majority are located in the anterior half of the brain. It has been assumed that the reason for this localization is that these tumors arise from pachionian bodies, the distribution of which is comparable to the distribution of meningiomas. These neoplasms ordinarily are very slow growing, some having symptoms for periods of 15 or more years. I have seen one instance in which a meningioma was the only abnormality found in a patient who had had Jacksonian seizures for 25 years; the tumor was in the proper location to explain the seizures. As these tumors grow, they gradually push the brain away; rarely do they actually invade the brain tissue. If the rate of compression is very slow, the brain will tolerate quite a large growth. Except on the rare occasion when they do invade the parenchyma, a thin capsule is located between the tumor and the brain, thus increasing the ease of surgical removal. Hyperostosis may overlie the meningioma and at times the tumor tissue may erode or invade the skull, eventually presenting itself in the subcutaneous tissues of the scalp. On occasion, there are multiple meningiomas. Calcification may occur within them.

Grossly these tumors are usually rounded, often lobulated masses which are grey or reddish grey in color. All are encapsulated. They may be attached to the dura by a broad or pedunculated base. Some are oval in shape, having a disc-like appearance (meningioma en plaque). The vessels in the capsule may be dilated and filled with blood; hemorrhages may be present within the tumor. Their microscopic appearance is exceedingly varied; various extensive and complicated classifications have been based on this. Some resemble closely endotheliomas and have been called such. The classi-

cal meningioma is the psammomatous type. This variety is made up of neoplastic cells which resemble mesodermal elements; it is quite cellular. The vascularity is a prominent feature. The cells have a tendency to be arranged around these vessels in a whorl-like fashion. Irregularly these central vessels often undergo degeneration and calcium is deposited in their stead; this deposit is called a psammoma body. The adjacent brain tissue is compressed and often atrophic; edema may be marked. On removal of the tumor, the brain tissue shows remarkable ability to re-expand and fill the gap.

The second largest group of sheath tumors are those which arise from the sheaths of the cranial and spinal nerve roots of which the acoustic neuroma is a common example. The acoustic neuromas compose approximately 5 per cent of intracranial tumors. These neoplasms usually occur in young adults and arise from the sheaths of the acoustic nerve. They may be bilateral; multiple meningiomas may be associated with acoustic neuromas or the patient may show peripheral neurofibromatosis (von Recklinghausen's disease). They are benign, encapsulated firm tumors. On cut section, they may be smooth or slightly lobulated and are pinkish to yellowish grey in color. The acoustic nerve as well as other adjacent cranial nerves are stretched and flattened by the tumor mass and may be embedded in the capsule, making surgical removal more difficult than is apparent. The brain stem is pushed to the opposite side and the adjacent cerebellum is compressed. Tumor tissue usually is present in the internal acoustic canal; in fact, some insist that the tumor arises from this region. As this portion of the neuroma grows, the internal acoustic pore is dilated (an x-ray finding of diagnostic importance). These neoplasms may be quite vascular, especially on the surface; cysts and areas of degeneration are not unusual. Microscopically, the acoustic neuromas are made up of numerous elongated cells closely resembling fibroblasts. These cells tend to be arranged in parallel rows, often giving a pseu-

dopallisade appearance. No nerve tissue is present in the tumor itself although the fibers from the acoustic nerve may be seen in the capsule.

In many ways similar to these are the neurofibromas which arise in the sheaths of the nerve roots, cranial or spinal, and the peripheral nerves. On rare occasions, these tumors may even occur within the brain or spinal cord parenchyma. They may be solitary tumors or numerous small nodular tumors may be found in many portions of the body. The latter variety is usually termed von Recklinghausen's neurofibromatosis, an hereditary neoplastic disease. The patient's attention ordinarily is called to these small nodules during adolescence or young adult life. They are usually very slowly growing benign tumors; rarely one or more of the nodules may become malignant. In addition to the tumor nodules, pigmented moles, cafe au lait spots, or local "elephantiasis" of the skin may be associated. In the intracranial cavity, tumors of both acoustic nerves are common and multiple meningiomas may be present. In macroscopic and microscopic appearance, they closely resemble the acoustic neuromas but are differentiated from them by the fact that numerous nerve fibers run irregularly through the center of the neurofibroma while these are apparent in the capsule only of the acoustic neuroma.

Tumors of the hypophysis are not true tumors of the nervous system and affect the brain by compression only. The nervous tissue in the eye and in the sympathetic system may be involved by neoplastic disease but will not be discussed because their activity more closely resembles that of any systemic tumor.

SUMMARY

The frequency with which tumors of the nervous system are seen emphasizes the need of the general practitioner to have a working knowledge of their features. To encourage such an understanding, salient points in the pathologic appearance and natural course of the more common examples have been reviewed.

PSYCHIATRIC ASPECTS OF
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The subject of mental symptoms in brain tumor has justifiably provoked increasing interest in recent years. A surprising proportion of brain tumors may be found among people with apparent psychoneurotic complaints. One might generalize to the extent of saying that it is best to assume that any "nervous" complaint may have a clinically important basis, even when psychologic motivation seems certain. This assumption should be maintained until, by repeated neurologic examinations, the possibility of organic brain disease is eliminated. That psychogenic factors may operate, where morbid anatomy seems the sole cause of symptoms, is not denied, and constitutes a possibility which demands equal alertness.

Before the Cushing era, one usually suspected a brain tumor when a patient presented the triad of headache, vomiting, and choked disc — with progression of symptoms. Unfortunately, however, the long heralded triumvirate of headache, vomiting and choked disc, fails us too frequently, for they are not signs of brain tumor *per se*, but evidences of increased intracranial tension, and therefore, except for those small tumors which arise within and block the ventricular system appear late in the course of the disease at a time when the tumor has reached an enormous size. If the tumor is malignant the old triad may appear quickly. If benign, the patient may go about for years with an operable tumor, suffering relatively minor distress of a character which, to many physicians, is not even reminiscent of brain tumor.

Psychiatric manifestations are rather common in brain tumors, regardless of the type and location. Various observers have noted incidence from 40 to 100 per cent. Gibbs, in a study of 1,545 cases, found in 27 of these cases the only mental symptom to be that of irritability; jocularity in 33, and drowsiness in 235. Others report larg-

er incidence. Nasse observed mental symptoms in 19 of 50 cases. Schuster and Moersch found them in 100 per cent. Oppenheim makes the unqualified statement that there can be no gross lesion in the brain without some disturbance, greater or less, in the psychic functions, if the observer has known the patient intimately before his illness. It is apparent that the definition of psychic symptoms is most elastic. Moersch, for example, included such general psychic phenomena as listlessness, indifference, anxiety, mental and physical let-down, dullness, mild apathy, and late stupor. Jameison and Henry emphasize the fact that an organic disease which occurs during the course of a psychosis, interrupts the psychotic state for a greater or lesser length of time. During this period the patient complains and behaves very much as would a normal person developing a similar disease. A change of this sort should therefore arouse the suspicion of an alert observer, and should indicate the necessity for repeated, careful neurologic examinations. These observations confirm those of Knapp, who found that in 79 of 104 brain tumors in insane patients, the changes in symptomatology were sufficient to attract attention. Although the statement is rather generally made that many patients are confined in institutions for the insane, when their primary pathology is really brain tumor, the percentage of such cases is small. For instance, Fisher found one case in 350 autopsies; Jameison and Henry found 26 brain tumors (four of which involved the frontal lobe) in a study of the material collected over a 30 year period, from the State Institutions of New York. The two conditions in which mental symptoms occur, that must be differentiated in suspecting a brain tumor, are, general paresis, and the psychoses of advanced age.

The causes of the disorders of the personality as a whole, cannot be defined solely by reference to the immediate precipitating event. This event could be a brain tumor, a vascular brain injury, an unfortunate love affair, or some other form of frustration. The factors of intrapsychic conflict war-

rant serious investigation. The mental changes occurring in brain tumors are indistinguishable from those produced by vascular diseases, syphilis, or a psychiatric condition associated with organic brain disease. Whatever the location of the tumor, prolonged intracranial hypertension and neoplastic destruction of the brain structure always produce some degree of organic dementia. This dementia is usually progressive, but varies considerably with changes in intracranial pressure. Usually regressive changes are most prominent with frontal and corpus callosum tumors.

EMOTIONAL CHANGES

There have been many observations of the emotional changes which accompany brain tumors, and some attempt has been made to correlate these changes with the location of the tumor, while some insist upon the specific nature of these manifestations. The majority of investigators have concluded that these symptoms are uncommon with frontal lobe tumors. Some have stated that the mood is determined in large part by the type of personality.

Wide variations in psychomotor activity are observed according to the location of the tumor, the rapidity of its growth, and the stage of the illness. In the early stages, irritability, restlessness and aggressive tendencies are commonly observed. The patient may have vague feelings of discomfort, or actual pain in his head or in other parts of his body. As intracranial tension increases, restlessness may be succeeded by general overactivity, and together with neoplastic destruction of the brain structures there may be an active delirious state. The patient is then quite excited and sometimes destructive. This excited phase may be of short duration, or may dominate the clinical picture for weeks or months. During the later stages of the illness, excited, overactive periods may alternate with those in which the behavior is slow and hesitating. So many individual variations are observed that it would be impossible to draw any general conclusions unless a large number of

cases were studied. In a few cases that have been observed it was found that hysterical or hypochondriacal symptoms were among the first indications of a personality change. When a tumor involves the optic thalamus, the unprovoked laughing and weeping, which is beyond control, represents a degree of emotional instability which is almost pathognomonic of disease in this region.

When one takes into consideration the complex problem of hallucinations it is difficult to find any certain correlation between this phenomenon and other manifestations of brain tumor. Hallucinations are associated with such a wide variety of conditions and diseases that it is impossible to determine to what extent they may be psychogenic or toxicogenic even in cases of organic disease of the brain. Crude hallucinatory phenomena seem to be more frequently associated with organic diseases of the central nervous system than with psychogenic disorders. On the other hand, in the so-called functional disorders, the hallucinatory material is more highly organized and expresses the tabooed longings of the individual.

Organic disease of the brain interferes with orientation, through actual destruction of essential structures, pressure from edema, hemorrhage, tumor growth, and through obstruction to the circulation of the cerebrospinal fluid. Adequate contact with reality may also be impossible because of the pathologic stimulation of the nervous structures by disease processes. In some cases hallucinations appear only occasionally, in others, frequently. The greater percentage of hallucinations are visual, and next in frequency are those auditory in character. Hallucinations appear more often in tumors of the temporal lobes, and this is especially true of the visual type. Tumors of the parietal lobes seldom have any hallucinatory manifestations, while those associated with tumors of the posterior cranial fossa are crude and poorly organized. Hallucinations may be present at any time during the course of the illness. Occasionally they are among the first symp-

toms of brain tumor, and they may appear a long time before a correct diagnosis of cerebral neoplasm is made. On the other hand, they may be presented very late in the disease. The quality of the hallucination is somewhat distinctive. A large percentage of the visual hallucinations consist of flashes of light—vividly colored—or objects. Animals of all characters are commonly seen. Auditory hallucinations associated with tumors of the frontal or temporal lobes almost always include voices, singing, bells, and other forms of musical sounds. Olfactory and gustatory hallucinations are associated with tumors of the temporosphenoidal lobe, particularly on the right side.

Delusions are seldom noted in connection with brain tumors. Even with previously psychotic patients, the development of brain tumor tends to minimize the expression of delusional ideas. Whenever delusions are present they are usually persecutory in nature.

Memory disorder in brain tumor is intimately associated with the capacity to maintain contact with reality. It does not occur as long as the sensorium remains intact. Whenever memory is defective, associated with mental confusion, there is evidence that intracranial hypertension exists. No special predilection to memory disorders are noted because of the location of the tumor.

A wide variation in the degree and kind of insight is observed at different stages. As a rule cerebral neoplastic patients, especially in the late stages, have little or no appreciation of their condition.

From many cases gathered, chiefly from literature, and personal experience in my practice, the psychiatrist unquestionably can, and does, contribute a great deal in recognizing early psychic manifestations of brain tumors.

In the early cases of brain tumor the reactions are determined more by the type of personality affected, but as the disease progresses the manifestations are increas-

ingly those of organic disease of the brain. They are sometimes dependent upon the location and rapidity of growth of the tumor, as well as upon the degree of intracranial hypertension. Terminal organic dementia is the result of prolonged and high degrees of intracranial pressure as well as the neoplastic destruction of the cerebral tissue elements. The symptoms frequently identified, by the psychiatrist, of localizing values, are those especially recognized in frontal lobe neoplasms. Frontal lobe tumors predominantly manifest psychic alterations and are closely related to functional psychoses. Temporal lobe tumors exhibit very unpleasant olfactory and gustatory hallucinations. Tumors in this location usually present highly organized visual and auditory hallucinations. Parietal lobe growths present little, if any, psychic symptoms. Occipital lobe growths frequently present visual and auditory hallucinations. Blindness without insight is not uncommon with tumors in this location. Cerebellar tumors present late mental alterations. Corpus callosum tumors present psychic changes similar to those found in frontal lobe pathology. Basal tumors present, outstandingly in their psychiatric manifestations, somnolence, disorientation, and early memory disturbances. Ponto-medullary tumors are commonly associated with crude tactile hallucinations.

CONCLUSION

It is my opinion that cerebral neoplasms are always associated with either minor or major alterations.

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DIAGNOSTIC FACTORS IN CRANIAL TUMOR

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The brain is one of the commonest sites of newgrowth formation in the body. This fact is not as widely known as it should be, and therefore diagnosis of brain tumor is often delayed. What is thought to be rare is not so readily looked for or recognized. I would like to reemphasize briefly some fundamental facts in the evaluation of the symptoms of brain tumor most useful to the general practitioner.

Diagnostic problems that can be understood by simple clinical observation are often too easily evaded and passed on too soon to the pathologist or radiologist for diagnosis without a methodical and confident examination of the problem. There are many reasons for this attitude on the part of the general practitioner. Among them is the fact that the teaching and discussion of neurologic diagnosis has always shown a strong tendency to be cast entirely into an anatomic mold. Written descriptions of nervous diseases are, too frequently, nothing more than dull catalogs of localizing signs and symptom complexes difficult to memorize and easily confused.

Illness, as it exists in neurology, must be evaluated in time as well as in space, and this truth is just as important in the recognition of brain tumor as in any other nervous disorder. Let us review some of the common symptoms attributed to brain tumor which have been universally described. They are headache, papilledema, vomiting, progressive loss of mental alertness, epileptiform seizures, and occasionally a slowing of the pulse. When all of these are present and obvious, diagnosis is not difficult. Most cases that come to a doctor, however, especially in the early stages of an illness, do not show this textbook picture of a well developed disorder. The doctor must decide as to the probability of brain tumor on the

basis of more vague complaints, and possibly only one or two of those listed above. The following facts have proved helpful in the evaluation of some of these complaints.

HEADACHE

Headache is commonly regarded as a frequent early symptom of a space-occupying lesion within the cranium. It is very necessary to have some definite idea about the kind of headache one sees in early brain tumor, especially if there are no other abnormal physical findings on examination. When you recall that headache is one of the most frequent complaints of man, it is obvious that this may be a very difficult task. The most common difficulty will be the differentiation of headache due to brain tumor from the headache of the psychoneurotic, the headache of the migrainous patient, and the headache due to gastrointestinal disturbance, fatigue, eye-strain, or other situations. One of the best ways to illustrate the difference between these types of headache is to record the usual verbal description of a headache in the case of a psychoneurotic woman.

"Doctor, just look at me. You can almost see my face drawing. It is all due to this head. I feel like my head is being twisted from my shoulders, being squeezed and put into a vise. I almost die with it. It never lets up. It is with me all of the time. You couldn't hurt me any more if you stood up and hammered nails into my head. It is the most terrific pain that anyone has ever suffered. Oh! How I suffer—terrible! Sometimes I think it isn't really a pain, but more like corkscrews and knives going into my head."

"Where is your pain?"

"It's everywhere, all over my head, doctor. I can't tell you where it is. It's just a headache, but it's awful."

Further questioning leads to more florid statements until it is almost impossible to decide exactly what the patient does feel.

"Nothing has ever helped it," she continues, "it is there all of the time. I have had it for months and years."

During this description the patient is constantly showing extreme animation, us-

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ing her hands, her facial muscles, her body, sometimes standing up the better to point to her head or to make a point, exerting every ounce of energy to provoke an appropriate appreciation in the physician of her intense suffering, of which, despite her appearance, there is very little evidence in the lines about her eyes, her mouth, or in her apparent state of health.

Contrast this with the description of headache extracted with some difficulty from the usual patient with a brain tumor. The patient shows very little animation, and gives one the impression that he does not care whether you get all the facts or not. There is a paucity of movement, and he is extremely economical in his words. He seldom moves except to look at the physician, or to shift his position slightly and carefully on occasion. He clearly appears intensely preoccupied in contrast to the former patient, who, during a florid description of the pains, attempts to arouse a reaction in the physician.

To the question, "You have a headache?", he answers, "Yes, sir."

"Tell me a little about it."

"Well, it's kind of a bad headache."

"Where is it?"

"It's right here," pointing to the frontal region.

"What makes it worse?"

"Only when I bend down. It's sometimes worse in the morning. Oh, yes! Maybe when I go to the toilet."

The difference in the behavior, description, and appearance of both patients is striking and significant. It is the headache of this last patient, poorly and uninterestingly described, that ought to trouble the physician, rather than the previous one so fully and dramatically presented.

The headache of true intracranial pressure increase is often throbbing in character, and is increased by any physical exertion of any kind, such as stooping or straightening up. When the patient awakens in the morning with headache, he frequently attempts to sit up to get relief. The headache frequently develops during the night, and awakens him. It is intermittent

and paroxysmal but soon becomes more frequent and more severe as the lesion progresses, and then nausea and vomiting, another of the symptoms of intracranial pressure, appear. As the tension continues to rise, the headache becomes frightful in intensity, the patient often clasping his head with his hands and crying out. Such paroxysms are often of grave import and a bad prognostic sign unless quick and effective measures are taken. Coma may supervene after this stage. Although the progressively downward course, which I have just described, may be compressed within the period of a very few weeks or spread out over many months, the other symptoms are gradually added to the headache.

The diagnosis of migraine may usually be excluded by paying special attention to its diagnostic points: The long history, probably dating from puberty, the occasional familial history, the precedence of the headache by a number of sensory symptoms, either visual or cutaneous, for some ten or twenty minutes, and the characteristic dawning of pain, usually in one temple, gradually extending over the forehead or up to the opposite side. This kind of headache is rapidly followed by the development of nausea and perhaps vomiting. After some hours, or a day, the attack passes off, leaving the patient in his usual health until the next attack.

Tumor and migraine may have the same type of throbbing headache. At its point of maximum severity it may reveal a tender scalp or pain in the eyes may be present. Motion of the eyeballs may produce pain, and a strong light may also be very unpleasant to bear. Again, it is the history which helps to distinguish between tumor and migraine.

The headaches of gastrointestinal disturbances in many otherwise healthy persons, or headache due to fatigue and eye-strain may also be paroxysmal. These lack the dramatic background of psychogenic pain, and do not have the progressive quality of headache due to increased intracranial tension.

Vomiting caused by intracranial tension is spoken of as projectile in type, but this is not usually the case, as it is far more common for the patient to experience nausea with some retching before the vomiting occurs. Physical exertion is prone to precipitate the vomiting, just as it precipitates the headache itself. This is by no means a frequent symptom, but it appears more rapidly when tension rises quickly within the skull.

PAPILLEDEMA

Papilledema is not invariably associated with a space-occupying lesion, for it may be absent throughout the whole course of the illness or may be very late in developing. In other cases, however, it develops very early and very rapidly, and if the pressure is not released quickly, papilledema may proceed to a consecutive atrophy of the optic nerve with permanent loss of vision. An important diagnostic point is that early in the course of papilledema visual acuity is often excellent, and the difference between the appearance of the eye-ground and the vision is striking. It is this fact that serves to differentiate true papilledema from optic neuritis or retrobulbar neuritis in much less severe conditions, since in the latter the loss of vision is greater than the appearance of the disc would lead one to expect.

MENTAL CHANGE

Mental change is a very variable diagnostic factor, much more so than headache or vomiting. In frontal lobe tumor, loss of mental alertness, alteration of disposition, and increasing irritability, may usher in the clinical picture. These are, however, local rather than general symptoms. Sooner or later in all cases of continual increase in intracranial tension, there is gradual blunting of alertness, disturbance of memory, and loss of power of attention or concentration.

SLOWING OF THE PULSE

Slowing of the pulse is not a common symptom or sign in brain tumor. If present,

one must suspect head injury, subarachnoid hemorrhage, or abscess, because they are conditions in which there is a rapid rise of intracranial tension which does tend to produce a slow pulse. In patients where the pressure rises gradually, it may reach a very high level without any slowing, but in spite of this the blood pressure does not rise above normal.

EPILEPTIFORM SEIZURES IN BRAIN TUMOR

Epileptiform seizures are important if one remembers that such fits cannot be distinguished in any way from those of idiopathic epilepsy. The fit may occur during the course of an intracranial tumor, and is often the first sign of such a lesion. The fits are symptomatic, and especially should be suspected of being due to a new growth if they make their appearance in an apparently healthy subject of middle age. Generalized fits are more common, although focal or Jacksonian seizures occur also with tumor. They may appear in the absence of a general rise in intracranial pressure, and may precede such changes by long periods. A rarely mentioned physical sign of increased tension is called "Duff's sign." It may even aid in picking out cases of increased pressure while surveying a ward full of patients at a distance. The sign consists of the repetitious rubbing of the tip of the nose at frequent intervals by patients who have increased intracranial pressure. It was named after Miss Duff, a nurse, who first called Dr. Hughlings Jackson's attention to it on the wards of Queens Square of London. She noticed that many patients with brain tumor, or increased intracranial pressure, repeatedly rubbed the nose, as if it was constantly irritated.

Other characteristic localizing signs such as a dreamy state, smacking of the lips, or a bad taste in the mouth, point to involvement of the uncinate and temporal regions. Characteristic visual field disturbances, difficulty in handling or recognizing objects, the aphasias, and all of the other signs of involvement of specialized regions of the

brain are fully and adequately covered in any textbook of neurology.

SUMMARY

I feel that no apology is necessary for the simplicity of the fundamental facts discussed; they can be easily remembered and can be of real value to the general practitioner who is not interested in detailed neurologic discussions.

BRAIN TUMORS

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As one of the speakers in a symposium on tumors of the central nervous system I think it well to point out that the time scheduled for the entire presentation is two hours, there are to be five speakers, and the time allotted to each one is 20 minutes. I cannot hope to discuss my particular assignment, brain tumors, in anything but the most superficial fashion within such a time limit. On the other hand, since this symposium is designed for the information of the general membership of the Society and not for specialists in neurology, details are not really essential.

I have concluded that the most profitable way to employ the time at my disposal is, after a few general remarks, to present the case histories and demonstrate the patients who illustrate certain important types of brain tumors. My purpose, I think, will be obvious: By the presentation of these patients I hope to be able to dispel to some small extent, at least, the general gloom associated with brain tumors in the minds of the profession as well as of the laity.

At the best, of course, the outlook cannot be described as bright, and it is altogether hopeless in the absence of prompt and energetic treatment. Although categorical and unqualified statements are always dangerous, I nonetheless shall make one. I desire to say deliberately that the

treatment of all brain tumors is surgical. No other form of therapy produces results. But before surgery can be instituted, diagnosis must be made and that is no simple matter. We have come a long way since that day in 1884 when Godlee removed a brain tumor which had been diagnosed and localized by Bennett by clinical methods, but at that we still cannot make a positive diagnosis of the type of tumor present in any given case except by the aid of the microscope. It is true that we can predict the type likely to be present on the basis of the age of the patient, the physical findings, and the behavior of the tumor (that is, the clinical course), but until other methods are devised it is still necessary to make the diagnosis by surgical exploration, even if the procedure amounts to no more than punch biopsy.

The diagnosis of brain tumors is the responsibility of another speaker but I may say briefly that a cerebral neoplasm should be suspected in any case in which there has been progressive loss of some function of the nervous system which cannot otherwise be explained.

MALIGNANT TUMORS

Tumors of the brain, like tumors of any other tissue, are classified first of all as malignant or non-malignant. Unfortunately, a large proportion, approximately 45 per cent, fall into two highly malignant classes, the glioblastoma (spongioblastoma) multiforme and the medulloblastoma. Another 37 per cent are astrocytomas, which are of a relatively mild degree of malignancy. More than 80 per cent of the gliomas thus fall into three categories and the outlook in the majority of such tumors is hopeless from the standpoint of ultimate cure. On the other hand, even the most malignant types of glioma are frequently greatly benefited by decompression supplemented by deep ray therapy and this plan would probably be the procedure of choice even if the exact type of tumor could be verified before direct surgical attack upon it were undertaken. The prognosis in any variety is naturally dependent upon the cytology but relief of symptoms as well as cure is dependent upon treatment.

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The type of malignant tumor usually seen in childhood is the medulloblastoma. It occurs in the midline of the posterior fossa and causes early and intracranial pressure. Little or nothing is accomplished by the removal of such tumors, even when it can be accomplished, and the surgeon does well if he is satisfied by decompression and deep ray therapy. Formerly the life expectancy in such cases was a little over a year. Recently, by the use of massive x-ray therapy, a number of patients are known to have survived, in comfort, for several years. Since this type of glioma metastasizes, the whole cerebrospinal axis must be treated.

The following case report illustrates what can be accomplished by therapeutic measures in medulloblastoma:

CASE No. 1

J. A., an 8-year-old white girl, was first seen December 4, 1939. Her illness had begun eight months before, with nausea and vomiting, which occurred early in the morning and almost every day. The tonsils and adenoids had been removed, with no improvement of symptoms. One month before she came under my observation, difficulties of locomotion developed. She fell frequently, once from a wagon and once from the porch. She deteriorated in other ways. Her vision failed so that she was no longer able to read, nor could she see well enough to feed herself. Her memory became impaired. She no longer asked to go to the toilet. When she tried to walk she would lean forward, then would begin to run, and finally would dash into some person or object, to prevent herself from falling on her face.

The child had had pertussis and pneumonia at one year of age. Otherwise she had never been ill. The family history revealed nothing significant.

Examination showed a well developed and well nourished girl lying quietly in bed and giving no evidence of pain or discomfort. The pupils were widely dilated and there was practically no response to light. Both discs were highly choked. No vision could be demonstrated on the right side. On the left the child could count fingers at a distance of four inches. She answered questions, although very slowly. She could not walk or stand alone. She could perform the heel-to-knee test, but the finger-to-nose test was fairly well done.

Roentgenograms of the skull showed convolutional atrophy and separation of the sutures. Spinal puncture was omitted. Other laboratory tests revealed nothing abnormal.

The preoperative diagnosis was midline tumor of the posterior fossa, probably medulloblastoma. At operation, which was performed December 15,

1939, a large purplish vascular tumor was exposed in the roof of the fourth ventricle. Since the tumor was well exposed, it was removed in toto, so far as could be judged grossly, even though a rush pathologic report on a biopsied specimen was medulloblastoma.

The postoperative course was stormy for several days, but by the eleventh day the wound was well healed and the child was discharged in good condition January 1, 1940. Since that time she has received intensive deep ray therapy to the entire cerebrospinal axis.

At the present time, almost two years after operation, she is in very good condition and exhibits no residuals except for impairment of vision. She has only light perception on the right side, as the result of optic atrophy, but she can read fine print with her left eye.

The common malignant tumor of middle life is the glioblastoma, which accounts for about 30 per cent of all gliomas. It usually occurs in the cerebral hemispheres. It causes great disability. It grows rapidly and may reach very large size, often involving more than one cerebral lobe and sometimes extending across the midline.

Some authorities advocate that as much of the tumor as possible be removed surgically, after which the dura be closed tightly, so that, when recurrence takes place, no space will be available for decompression and there will be prompt and merciful release by death. This type of tumor is largely responsible for the fatalistic outlook so many members of the profession, to say nothing of the laity, hold about newgrowths of the brain, and I must grant that the point of view is justified. Patients with glioblastoma die so rapidly that I cannot demonstrate any living subject for you tonight.

Other gliomas present a much more hopeful picture. They are of lower grades of malignancy, complete removal is often possible, recurrence often does not take place, and cases are on record in which survival has lasted for 20 years or more after operation.

Although gliomas do not metastasize outside the central nervous system, the brain enjoys no immunity to metastases from tumors in other parts of the body and metastatic brain tumors are common. Lesions in and about the thoracic cage are particularly likely to exhibit cerebral metastases. Sec-

ondary brain tumors usually occur in patients whose outlook for ultimate recovery is hopeless and attempts at surgical extirpation are unjustified. These unfortunate persons, however, can frequently be relieved of the most distressing symptoms referable to cerebral metastases by appropriate surgical decompression, sometimes supplemented by deep ray therapy.

Cases are on record in which tumors of the third ventricle and of the pineal body have been successfully removed. The brain stem itself is still inaccessible surgically and tumors of this region, especially of the pons, which usually are gliomas, are practically inoperable. Relief, however, is possible, as the following case report shows:

CASE No. 2

D. W., an 11-year-old white boy, was first seen September 15, 1941. For the past three months he had had frontal headaches of steadily increasing severity and for one month he had suffered from nausea and vomiting, which often occurred abruptly, and from diplopia. Recently he had been closing one eye, to suppress the extra image. He had ceased to play with other children and had become dull and apathetic. He slept through the night and often spent most of the day sleeping. He had developed difficulty in walking and general weakness, more pronounced on the left side. Neither the personal nor the family history contained anything of note.

Examination showed a well developed and well nourished white boy lying quietly in bed and in no apparent pain. The right pupil was larger than the left. Both reacted to light and in convergence. Both discs were choked. There was a crossed diplopia in looking to the left. Babinski's sign was present bilaterally. The child answered questions rapidly but spoke in a low monotone. During the examination he complained of headache and vertigo and at intervals he put his hand first over one eye and then over the other.

Roentgenograms of the skull revealed nothing abnormal. Examination of the spinal fluid also revealed nothing abnormal except a pressure of 600 mm. of water.

The left-sided weakness, together with the involvement of the right third nerve, suggested the presence of a lesion in the right peduncular region, which did not promise much from operation. The increase in intracranial pressure, however, demanded some sort of relief and suboccipital decompression and exploration were decided upon.

The operation was performed September 25, 1941. The dura was drum-tight but was relaxed after tapping of the left lateral ventricle. Nothing abnormal was found in the vermis, and no evidence

of tumor or cyst could be found in either lobe. Wide left-sided decompression was carried out. A few days later a ventriculogram revealed marked dilatation of the two lateral ventricles as well as the third, with no displacement, the findings indicating the presence of a tumor below the level of the third ventricle.

Recovery was without incident. Deep ray therapy was instituted a few days after operation and the patient was discharged in good condition October 8, 1941.

At the present time the child is still perfectly comfortable in all respects. The headache, vomiting, and diplopia have disappeared, he is steady on his feet, and the fundi are normal.

NON-MALIGNANT TUMORS

Non-malignant brain tumors chiefly originate in connective tissue. Since they press upon and into the brain substance and do not actually invade it, theoretically they offer ideal opportunities for removal. Practically the situation is not always so hopeful, because many such tumors spring from the immediate vicinity of large venous sinuses or arise from the base of the brain. As a result, exposure is often extremely difficult and removal is attended with technical difficulties which may be unsurmountable.

Although hemangioma is not a tumor confined exclusively to tissues of the brain, as are the other tumors which have been discussed, a small number of such neoplasms arise from the vascular structures of the brain. Sometimes they can be demonstrated by arteriography but more often exploration is undertaken in the belief that they are gliomas. The outlook is generally favorable. Some hemangiomas can be removed in toto, some can be controlled by ligation or coagulation, and others respond to deep ray therapy. The following case report illustrates the results of treatment in this type of tumor.

CASE No. 3

L. L., a 44 year old white woman, was first seen October 2, 1941. For the past year she had noted progressive weakness of the right hand. She first observed that she could not hold the little finger rigid when she tried to file the nail. Then all the fingers became weak and she dropped whatever she tried to hold. The movements of the hand became uncertain. If she tried to massage her face she found that she was hitting it with jerky, uncertain movements. She lost the power to write.

Soon she found that she could not abduct or adduct the fingers or thumb and the hand felt full and tight. Other symptoms were absent until a few days before the patient came under observation. Then she had some slight blurring of vision and developed a rapidly increasing difficulty in saying what she wanted to say. She had never suffered from headaches or from vomiting.

Examination showed a well developed and well nourished white woman lying quietly in bed and in no apparent pain. Her general physical condition was excellent. Neurologic examination showed weakness of the right side, abnormally active tendon reflexes, and definite reduction in both deep and superficial anesthesia. The finger-to-nose test revealed incoordination. Babinski's sign was present but was not constant. There was slight haziness of the margin of the right disc but no measurable elevation.

Roentgenograms of the head revealed nothing abnormal and the spinal fluid was also normal in all respects, including the pressure (140 mm. of water). Although the findings pointed to a tumor in the left hemisphere, encephalography was considered desirable for sharper localization. The results of the examination, however, were indefinite, and exploration was decided upon.

When a large flap had been turned down on the left side, the dura was found to be tight, the convolutions wide and the sulci ironed out, but no definite tumor was encountered, either superficially or by exploration with the Cushing needle. Tissue taken for biopsy was not absolutely diagnostic but was very suggestive of hemangioma.

The patient made an uneventful recovery and was discharged on the eighth postoperative day. Some time later she was given a single course of deep ray therapy. At this time she is in excellent condition. She has returned to work, has normal use of the affected hand and arm, and notices only occasional speech difficulties and then only for a word or two.

NEUROMAS

Acoustic neuromas are probably the most readily diagnosed of all intracranial tumors because of the characteristic history and physical findings. If they are attacked before the brain stem has become distorted a favorable result can be expected. Usually there is no great difficulty in the diagnosis of pituitary tumors and the results of early surgery are often favorable. In most instances loss of vision is arrested and sometimes the field of vision will widen considerably after the tumor has been removed. Meningiomas are also amenable to surgery, as the following case report demonstrates.

N. B., a 52 year old white woman, was first seen September 29, 1941. She had been in excellent health until a few days before, when she had had a convulsion early in the morning, followed by a dull frontal and bitemporal headache. In the afternoon of the same day she had a sudden attack of unconsciousness and fell from her chair. An ambulance was immediately summoned, and on the way to the hospital the patient again lost consciousness and had a second convulsion.

Physical and neurologic examinations were essentially negative objectively except for the presence of a large protuberance on the right forehead just below the hair line. The tumor was about three inches in diameter and was elevated nearly an inch in the center. The circumference was bony hard, the center soft. Pulsation was not present. The roentgenologist's report follows:

"Examination of the skull by means of stereoscopic postero-anterior and right lateral projections, as well as a film designed to silhouette a soft tissue swelling on the right side of the forehead, reveals an irregular rarefaction of the upper portion of the vertical plate of the right frontal bone. The affected area measures 6 x 4 centimeters in its greatest dimensions. The erosion is not uniform and there is complete perforation of both tables only in a small area in the supero-medial angle of the lesion. This underlies the superficial soft tissue swelling and it is noted that radiating spicules of bone extend beyond the outer table of the skull into the base of the rounded mass on the forehead. There is a localized hyperostosis of moderate degree in the horizontal plate of the frontal and anterior portion of the parietal bone. There is a considerably increased vascularity of the right frontal bone, many small channels leading directly into the rarefied area. The diploetic vascular channels are otherwise not unusually prominent and are symmetrically distributed. The cranial vault, except for the changes described, is normal. The sella is of average size and contour and the clinoids are intact. The findings as a whole are strongly suggestive of a meningioma underlying the vertical plate of the right frontal bone and possibly also extending as a plaque under the hyperostotic area. Faint calcium depositions which are apparently within the skull underlying the lesion in the frontal bone probably represent psammoma bodies in the tumor. The relatively small size of the superficial tumor as compared with the area of the skull which is affected rules out the possibility that it is the original lesion. However, the remote possibility of a metastatic malignancy of low grade cannot be excluded."

A diagnosis of meningioma was made and operation was decided upon. The tumor, the involved dura and the bone were removed en masse. The tumor, which proved to be a dural endothelioma, was dumbbell-shaped, the extracranial and intracranial portions being nearly the same size.

Recovery was uneventful and the patient was discharged from the hospital on the eleventh post-operative day (October 5, 1941). At the present time she is perfectly well and has resumed her previous social and religious activities.

SUMMARY AND CONCLUSIONS

It is a truism to say that little by little surgery has broken down its previous frontiers and has advanced into regions previously thought inaccessible, yet the statement is entirely justified in respect to brain tumors. Advances in neurosurgery, including better diagnostic methods, more exact localizing methods, and improvements in technic have brought the surgery of brain tumors to a point at which it can challenge comparison, both as to operative mortality and postoperative results, with many other types of surgery.

Tumors of the brain will always constitute a serious menace to life, and the ultimate outlook in certain classifications is hopeless from the standpoint of cure. A patient with any type of growth, however, should be given the chance which surgical exploration offers, since even if radical removal is not possible, decompression frequently relieves symptoms and supplemental deep ray therapy may make possible longer or shorter periods of comfort. Exploration is the more justified because a patient with a brain tumor has everything to gain from it and nothing at all to lose.

The four case reports presented in this paper are illustrations of what can be accomplished by the measures just outlined.

LAMINECTOMY FOR SPINAL CORD TUMOR AND OTHER DISEASES

ANALYSIS OF 151 CONSECUTIVE CASES

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The term cord tumor is used clinically in an inaccurate sense to describe any space-taking lesion which compresses the cord or its nerve roots. Many such lesions eventually prove to be non-neoplastic and should no longer be considered as tumors. Ruptured

intervertebral disc, Pott's disease, epidural abscess and cystic arachnoiditis are examples of these. Thus, a more acceptable definition of a spinal cord tumor is any neoplasm which compresses the cord or its nerve roots.

Tumors of the spinal cord have been classified in several ways. Clinically, they may be divided into: (1) intramedullary tumors such as gliomas and syringomyelia; (2) extramedullary-intradural tumors such as meningiomas and blood vessel tumors, and (3) extradural tumors such as primary and metastatic growths of the vertebral column and the epidural space.

It is my intention in this symposium to present the problem of spinal cord tumor in its true perspective. Since most writers on the subject have confined their remarks to histologically verified cases, data concerning erroneous clinical diagnoses and negative surgical explorations are apt to be omitted.

This study is based on 151 consecutive primary laminectomies performed on as many patients for various diseases among which were spinal cord tumors. All operations were performed by me between 1938 and 1942. Sixty-seven of these were done at Charity Hospital in New Orleans and constitute all of the patients treated by laminectomy on the Tulane Surgical Service. The remaining 84 cases were distributed among nine private hospitals. The number of laminectomies and the condition for which the operation was performed are shown in table 1.

TABLE 1

Laminectomy	Indication
101	Sciatica (due to ruptured intervertebral disc)
10	Chordotomy
5	Epidural spinal abscess
5	Arnold-Chiari malformation
3	Removal of bullet
2	Torticollis
2	Fracture-dislocation
1	Abscess of cauda equina
22	Spinal cord tumor
151	Total

That spinal cord tumor is relatively rare is suggested by the fact that in this series of cases only one laminectomy in seven was performed for this condition. It has been fairly well established by various writers

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that histologically verified cord tumor is one-tenth as common as verified brain tumor. During the period that this series of cases covers, 91 cases of brain tumor were treated. This means that there was one tumor of the spinal cord for every four brain tumors. The discrepancy between these figures is due to the fact that all of my cases of spinal cord tumor have been included without regard to histologic verification.

During this four year period laminectomy was performed 22 times on patients with a clinical diagnosis of cord tumor. In all cases except two there was a complete or partial subarachnoid block upon compression of the jugular veins. Also, all patients had incomplete motor and sensory paralysis of the lower extremities, and in seven instances, of the upper extremities as well. Among the lesions encountered were six gliomas. The spectacular improvement and the persistent good health of the patient in one of these cases suggests that multiple sclerosis or some disease other than glioma was the true condition. A syringomyelic cyst, which caused a spinal block and paraplegia, was the only other tumor in the intramedullary group. In the extramedullary-intradural group were a neurofibroma at the cervical level, a hemangio-endothelioma of the cauda equina, a gumma of the thoracic dura, an aneurysm (previously reported) and a case of neuritis of the cauda equina. Obviously, the latter case represents a mistake in diagnosis. In the extradural group there was a case of Hodgkin's disease of the epidural space. There were three primary tumors of the vertebrae including a chondroma, a solitary myeloma, and an unclassified bony stenosis of the entire thoracic spinal canal. There were five metastatic tumors of the vertebral column which invaded the epidural space and compressed the spinal cord. The remaining case was technically not a tumor but a ruptured cervical disc which produced quadriplegia. This is included here because the clinical diagnosis was tumor of the spinal cord.

The mortality rate of laminectomy for tumor of the spinal cord can best be deter-

mined by considering the mortality for laminectomy in general. Of the 129 cases of laminectomy for conditions other than cord tumor, there were nine deaths (7 per cent). Three of the 10 patients who had chordotomy for painful and incurable carcinomas died in the hospital. One patient with epidural spinal abscess (previously reported)² died on the seventy-sixth post-operative day following the development of empyema. The other four patients are known to be alive and walking. The patient with abscess of the cauda equina died of meningitis. One of the two patients with fractured spine died a few days after operation. Three of the five infants with Arnold-Chiari malformation died.

This low mortality rate is obviously due to the fact that there were no deaths among the 101 laminectomies or partial laminectomies for chronic sciatica due to ruptured intervertebral disc. If these cases and the five of Arnold-Chiari malformation in hydrocephalic infants (combined laminectomy and craniectomy) are excluded, we have a clear conception of the true risk of laminectomy for conditions other than tumor. The operative mortality in this instance becomes about 27 per cent (table 2).

TABLE 2

Cases	Indications	Deaths
10	Chordotomy	3
5	Epidural spinal abscess	1
3	Bullet in spinal canal	0
2	Torticollis	0
2	Fracture-dislocation	1
1	Abscess of cauda equina	1
23	Total	6 (26.9%)

The mortality is definitely less than this in cases of spinal cord tumor. Of the 22 consecutive cases of cord tumor reported here, 20 patients left the hospital alive, a mortality rate of 9.1 per cent. One of the two patients who died in the hospital had paraplegia due to metastatic carcinoma of the sixth thoracic vertebra. After operation he recovered sufficient use of his legs to walk about the hospital with an attendant. He remained in the hospital of his own choice and died on the eighty-first post-operative day of primary carcinoma of the bronchus. The patient with myeloma died of generalized metastasis on the twenty-

seventh postoperative day after having sufficiently recovered to be up in a wheel chair. Thus, it can be seen there was no death immediately following operation or attributable to the operation.

What is the fate of patients operated upon for cord tumor who do leave the hospital alive? Obviously, the answer depends upon the degree of cord damage existing before operation and upon the nature of the lesion if the tumor was not entirely removed. Eight of the 20 patients who left the hospital are known to be walking without crutches. Four others are alive but partially or completely confined to wheel chairs. One died two years later of a primary malignancy after recovering sufficiently to walk without assistance. The patient with myeloma died eight months later. Of the remaining six cases little is known except that these patients were discharged from the hospital in varying states of paraplegia.

The 22 cases, diagnosed clinically as spinal cord tumor, were not the only ones coming to my attention during this four year period. Approximately eight other patients with cord tumor in whom a spinal block could be demonstrated were advised not to have operation because of long standing complete motor and sensory paralysis of the lower extremities. In several of these cases the diagnosis had been made earlier but operation was refused by the patient.

SUMMARY

The outstanding fact in connection with the entire subject of cord tumor is that the diagnosis is not made early enough in the majority of cases. It cannot be too strongly emphasized that when a patient begins to have urinary retention with weakness or numbness of the legs, the attending physician should obtain a surgical consultation as quickly as possible, for spinal cord tumor, in contrast with intracranial tumor, can be and frequently is a surgical emergency.

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PELVIC THROMBOPHLEBITIS* A STUDY OF THE ETIOLOGIC FACTORS FROM A STATISTICAL STANDPOINT

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A review of the recent literature reveals surprisingly few articles dealing with pelvic thrombophlebitis, a condition which is far more common than is generally recognized, and which deserves more study, if its alarmingly high mortality and morbidity are to be reduced. With this idea in mind, it was decided to review all of the cases which had occurred at the Charity Hospital at New Orleans, during the past five years.

Study of the charts of the non-fatal cases, made it soon apparent that the clinical diagnosis, in the majority of instances was unjustified, and probably inaccurate. Considering the history, findings, and subsequent course, it must be regarded that the larger number of these cases were simply femoral, or saphenous thrombophlebitis. It was then decided to review only the charts of those cases in which a clinical diagnosis had been confirmed at operation, or in which the condition had been proved at autopsy.

The total number of cases studied, according to these criteria, is 41. With seven exceptions, all of these patients died, and at autopsy pelvic thrombophlebitis was discovered. These seven cases were diagnosed correctly clinically, the findings were confirmed at operation, and recovery followed. Four additional patients were operated

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upon, but died, and the diagnosis was substantiated at autopsy.

The total number of cases, 41, in no way represents the true incidence of the disease, as we have no way of determining how many patients recover spontaneously, or under conservative management, the diagnosis never being established. Even more important, we have no way of determining how many patients die of the condition, unless an autopsy is performed in every instance. In reviewing the records of all patients who died on the obstetric and gynecologic services during this period, we discovered an equal number of cases, which presented identical histories, physical findings, and clinical course, but unfortunately, an autopsy was lacking, to confirm the diagnosis. Those cases are not included in this series.

Most of the patients died on the obstetric and gynecologic services, but some few experienced their demise on the medical, surgical, or genito-urinary services, for want of an accurate diagnosis or other reasons (table 1).

TABLE 1

	Cases	Average age in years
Total series	41	32.1
Postoperative	10	45.3
Puerperal	26	27.1
Youngest patient		16
Oldest patient		76
	15 (36.5%)	25 or under

AGE INCIDENCE

The literature on thrombophlebitis, in general, places the patients in an older age group, but this concerns mainly postoperative thrombophlebitis. For instance, at the Mayo Clinic,¹ it was found that the average age of the patient developing thrombophlebitis was ten years higher than the average age of their operative cases. Here, we must remember, postoperative cases comprise only one-fourth of the series. The larger number of cases followed complications of pregnancy, automatically placing them in a younger age group. In our series, the average age is 32.1 years. Considered alone the postoperative patients averaged 45.3 years. The two extremes, 16 and 76 years, indicate

that no age group is exempt, except, perhaps childhood (table 2).

TABLE 2
RACE

	Cases	Per cent
Colored	25	61
White	16	39

There seems to be some slight increased incidence in the colored race. This may be apparent or real. The ratio of colored deaths to white deaths at Charity Hospital, in 1941, was 55:45. There are many possible explanations for the higher incidence in the colored race; for example, fibroids and salpingitis, but the difference is too small to warrant investigation (table 3).

TABLE 3
DISTRIBUTION OF CASES BY YEARS

	Cases	L-1 T-0 I-0
1937	1	
		L-6 T-1 I-0
1938	7	
		L-3 T-3 I-1
1939	7	
		L-2 T-6 I-0
1940	8	
		L-1 T-7 I-4
1941	11	
		L-0 T-7 I-0
1942	7	(4 mos.)

Note: The three hospital services are indicated by the three symbols, L, T, and I. Admissions to these services are based on a 2:2:1 ratio.

We see, by the above table, that the incidence has increased yearly. We interpret this as reflecting a higher incidence of complete autopsies. In reviewing the records and protocols, one is impressed by the improvement in both, during the past few years. In no instance was pelvic thrombophlebitis diagnosed by a sketchy autopsy. The more detailed the examination the higher the incidence becomes. Many cases were lost, because the discovery of any peritoneal fluid, at all, at autopsy, led to a diagnosis

of peritonitis and the pelvic veins were left unexamined.

The month of July, 1937, was chosen for the beginning of this study, because it marked the adoption of the improved record system at Charity Hospital. Only one case is recorded for the last six months of that year, but it so happens that this particular case demonstrates, better perhaps than any other single case, the extensive and remote pathology in a case of postoperative thrombophlebitis. This patient died of cerebral infarction.

The distribution of cases among the different hospital services is not significant; it reflects more the frequency of autopsy, among the deaths on the three services. The increased incidence on one service is partially explained by the fact that seven of the cases were diagnosed at operation alone. Had these particular patients not been operated on, they would not have found their way into this series, unless they had not only died, but also been subjected to post-mortem examination.

PARITY

We attach no significance to parity, (table 4) except in its relation to complicated delivery. Naturally the postoperative cases, representing an older age group, had a higher parity, but it is difficult to assign any importance to previous deliveries in these cases except when delivery or abortion occurred immediately prior to the operation. Rather, there seems to be more significance to gynecologic surgery prior to the delivery. The one case of a nulligravida is described in detail later.

TABLE 4
PARITY

Average for series	G4 P3
Nulligravida	1 case
Primipara	7 cases
Multiparae	33 cases

ETIOLOGY

When the cases are classified as to etiology, the picture becomes distorted (table 5). We purposely did not transpose the number of cases into percentage figures, because the resultant figures would give a false impression of importance to the dif-

ferent groups. Unquestionably, the number of postabortal cases should be double the figure given in the table. Analysis of the case records proves this to the investigator, except for one unfortunate feature—autopsy is lacking. It should be stressed here, that all criminal abortions are legally “coroner cases”, so that autopsy study is not available. In some few instances, either through error in the clinical diagnosis, or through consent of the coroner, an autopsy was performed at the hospital. These cases showed an exceedingly high incidence of pelvic thrombophlebitis, in its severest form.

TABLE 5
ETIOLOGY

	Cases
Postpartum	17
Postabortal	9
Postoperative	10
Postirradiation	1
Ovarian tumor	1
Fibroid tumor (alone)	1
Cervical stenosis and P. I. D.	1
Unexplained	1

Again, the figure for postirradiation thrombophlebitis would be increased, if all cases could be included. The immediate temperature rise, after the insertion of radium, is frequently due to endometritis, with secondary pelvic thrombophlebitis, very similar to the postabortal type.

The class of pelvic tumors, is, perhaps, more related to phlebothrombosis rather than thrombophlebitis. Regardless, there is sufficient evidence to indicate that some of the fatal emboli that occur in these cases, either on the operating table, or postoperatively, could be prevented by prophylactic venous ligation, prior to the removal of the tumor, especially when there is a swollen leg. The two patients with pelvic tumor in this series died before any operative procedure was done; both suffered massive pulmonary embolism. We have not included in this series the much too common cases of massive pulmonary embolism occurring postoperatively, where the source of the embolus lies in the thigh, calf, or foot. We have included only three cases of massive pulmonary embolism, and in all

three of these, the source of the embolus was in the pelvic veins.

The one unexplained case is intensely interesting, and in no way can we account for its occurrence. The patient was a single, nulliparous, 18 year old colored girl, who gave the following history. There was no menstrual irregularity. There was sudden pain in the back, feeling of coldness, nausea, vomiting, pain in the right, then the left chest, followed by dyspnea and cough. The patient's mother had noticed some swelling of the left leg ten days previous. The patient ran a mild septic course, while in the hospital, then suddenly died. Autopsy revealed thrombosis of the right uterine, left and right hypogastric veins, bilateral pulmonary infarcts, and massive pulmonary embolism. There was no other pathology.

ANALYSIS OF POSTPARTUM CASES

We see that in only two instances of hospital delivery, was there lack of interference of one sort or another (table 6). In one of these two, a previous amputation of the cervix complicates the picture. Four home deliveries are listed as being normal. However, in one instance, the placenta was retained, and was not removed for nine days. This patient died of purulent thrombophlebitis of the uterine veins.

TABLE 6
ANALYSIS OF POSTPARTUM CASES

		Voorhees bag	1
		Forceps—episiotomy	5
		(One had prev. myomec- tomy)	
1. Hospital	10	Normal	2
		(One had prev. ampu- tation of cervix)	
		Cesarean section	2
		(Both classical type)	
2. Home	6	Normal	4
		Forceps	2
3. Other institutions	1	Normal	1

We feel that retained placenta, or placental fragments, is extremely important in the development of puerperal pelvic thrombophlebitis. A large number of the cases describe excessive hemorrhage at the time of delivery, and passage of clots in the puerperium. The one case, delivered in an-

other institution, had suffered a perineal laceration at the time of delivery, and this had been repaired. The patient died of extensive pelvic thrombophlebitis, involving the ovarian veins, and extending into the renal vein on the left, and the inferior vena cava on the right. The guilty organism in this case was the *Streptococcus fecalis*.

ANALYSIS OF POSTABORTAL CASES

The high incidence of spontaneous abortion in this group is impressive (table 7). Of course, this is open to speculation, but the evidence in these cases pointed to lack of instrumentation. In reviewing the hospital records, it was surprising to observe the number of women who aborted spontaneously on the wards, and subsequently developed a septic course. Needless to say, could all cases of criminal abortions be included, that actually died of pelvic thrombophlebitis, the ratio of criminal to spontaneous abortions would be quite different.

TABLE 7 ANALYSIS OF POSTABORTAL CASES	
Spontaneous (One had fibroid)	5
Questionable	1
Criminal	3

It is difficult to evaluate the significance of the fibroid in one case of spontaneous abortion. We believe that this complicating factor merits some attention, if for no other reason than its part in producing the abortion.

ANALYSIS OF POSTOPERATIVE CASES

Hysterectomy is undoubtedly the operation most frequently followed by pelvic thrombophlebitis (table 8). Studies of postoperative embolism of the massive type, have shown that hysterectomy, especially when performed for fibroids, is the most frequent precursor of that complication.² We are dealing here with a different type of pathology, but the same principles seem to apply. Tissue destruction, traumatized vascular endothelium, circulatory stagnation, and sepsis are the most significant considerations. Sepsis was the most prominent feature in all but three cases. These three died of massive pulmonary embolus, resulting from pelvic vein thrombosis. The autopsy protocols in these three cases would

suggest phlebothrombosis, rather than thrombophlebitis, as the responsible pathology in the development of the embolus. This makes no difference, as either condition may be followed by fatal pulmonary embolism.

TABLE 8
ANALYSIS OF POSTOPERATIVE CASES

Hysterectomy	6
Vaginal	3
Supravaginal	3
D and C, conization, hemorrhoidectomy	1
Trachelorrhaphy and suspension	1
Myomectomy and enucleation of cyst	1
Ileostomy	1
	—
Total	10

One might wonder about the relationship between an ileostomy, and the development of pelvic thrombophlebitis. This particular case had a residual pelvic infection, resulting from a previous hysterectomy, and the ileostomy was performed to relieve a late postoperative obstruction. The immediate factor in the production of the thrombophlebitis, was of course, the ileostomy, but remotely, the hysterectomy was responsible.

CULTURES

Perhaps this section would best be omitted entirely, because of the paucity of cultures (table 9). However, since the title of the paper mentions the etiology of the disease, there must be some interpretation of the available material. It must be realized, obviously, that one or two negative blood cultures bear no significance, and that one cannot hope to attain any number of positive cultures, unless many are taken at the proper time. In this series, the relatively high incidence of *Staphylococcus aureus* septicemia, among so few positive blood cultures, is impressive. These cases were all found in the postabortal group. Not enough cultures were taken to be of statistical significance, but it does seem strange that the hemolytic streptococcus, so prominent in most reports, was not cultured in a single instance. Perhaps the influence of chemotherapy is manifest here; all of the patients were treated intensively with all of the sulfonamides.

TABLE 9
CULTURES

	Cases
1. None taken	10
2. Blood	
Negative	20
Positive	6
<i>Staph. aureus</i> pyogenes	3
Anerobic streptococcus	1
Saprophytic staphylococcus	1
3. Heart	
Negative	6
Positive	3
Anerobic <i>Strep. pyocyaneus</i>	1
<i>Cl. welchii</i>	1
<i>Staph. aureus</i>	1
4. Lung abscess	
Negative	1
(Peritoneum, vena cava, <i>Strep. fecalis</i>)	
Positive	2
<i>Staph. aureus</i>	2
(Blood negative)	
5. Peritoneum	
Negative	1
(Smear showed diplococci and rods)	
Positive	3
Pyocyaneus (at operation)	1
<i>Strep. fecalis</i>	1
Non-hemolytic strep.	1
6. Thrombus from vena cava	
Negative	0
Positive	1
(<i>Strep. fecalis</i> , and <i>Staph. aureus</i>)	
7. Thrombus from ovarian vein	
Negative	0
Positive	1
(<i>A. fecalis</i> , non-hemolytic strep., saprophytic staph.)	
8. Sputum	
Negative	0
Positive	2
Pneumococcus XVI	1
(Blood: <i>Staph. aureus</i>)	
<i>Staph. aureus</i>	1
9. Uterine tube	
Negative	0
Positive	1
(<i>E. coli.</i>)	
10. Skin abscess	
Negative	0
Positive—(anerobic streptococcus)	1
Negative	0
Positive	1
(Anerobic streptococcus)	

The one sterile lung abscess is interesting, as *Streptococcus fecalis* was demonstrated in the peritoneal cavity, and in the thrombus present in the vena cava. Local tissue immunity, chemotherapy, and the high concentration of oxygen in the lung may serve as possible explanations for the

sterile abscess. It has been noted previously, that patients being treated intensively with the sulfonamides tend to develop sterile lung infarcts, unless the infection is overwhelming. It is just as true, however, that the patients who submitted to venous ligation experienced quick resolution of their abscesses. Could these have been sterile? There is one case listed above, wherein a positive sputum was obtained, for type XVI. This was a postabortal case of staphylococcic septicemia, several positive blood cultures being obtained. Undoubtedly, the presence of the pneumococcus was just incidental, but it almost provoked the diagnosis of lobar pneumonia, until the blood cultures were reported. Had more sputum typings been done in the cases suspected of pneumonia, in all likelihood the pneumococcus would have been more often falsely accused.

VESSELS INVOLVED

The total number of vessels involved in the 41 cases was more than double the number of cases (table 10). In some instances, only one vessel was affected, but more often, two, and three vessels were the seat of pathology. The distribution deserves attention: we note a relatively high number of iliac and uterine veins involved. Halban and Kohler,³ in their series of 82 fatal cases, found the following distribution, quoted in part:

"Combinations	31
Ovarian	19
Parametrial	
Venous plexus	14
Vena cava	4
Uterine	2"

TABLE 10
VESSELS INVOLVED

1. Ovarian	18
Right only	8
Left only	0
Bilateral	10
2. Broad ligament	10
(Pampiniform plexus)	
3. Uterine	20
Right only	4
Left only	3
Bilateral	13

4. Iliac	26
Right	13
Ext.	3
Int.	5
Com.	5
Left	13
Ext.	3
Int.	6
Com.	4
5. Uterine sinuses	5
6. Inferior vena cava	4
7. Renal	2
8. Femoral	2
9. Vesical	1
10. Endometrial	1
(Cervical stenosis)	
Total vessels involved	89

By contrast, Kerr⁴ states that the post-mortem examination of fatal cases reveals the uterines, and the iliacs to be much more frequently involved than the ovarians. The not infrequent involvement of the inferior vena cava, in both Kohler's and our own series, is of special significance, from a therapeutic standpoint. We feel that the factors of intra-uterine manipulation, the site of placental attachment, and the occurrence of cervical and perineal lacerations, largely determine which vessels will be involved.

SITES OF INFARCTION

Pulmonary infarction was found in 85 per cent of the cases in this series (table 11). Usually the infarction was silent, but when it produced symptoms, these were usually misinterpreted, and a diagnosis of bronchopneumonia made. Routine x-ray examinations of the chest on these cases, when the diagnosis of pelvic thrombophlebitis is first made, has almost invariably revealed multiple infarctions, some with abscess formation, despite lack of clinical symptoms. For this reason we believe the following policy should be established: Whenever pelvic thrombophlebitis may be

TABLE 11
SITES OF INFARCTION

1. Lung	35
2. Spleen	8
3. Kidney	5
4. Heart and pericardium	3
5. Brain	2
6. Pancreas	2
7. Liver	1

suspected, immediately have x-ray pictures taken of the chest. The results will be surprising.

Also to be noted are the two fatal brain emboli. As in other types of sepsis, epicardial infarction does occur, and may further confuse the picture.

ANALYSIS OF CASES

Analysis of the influence of operative intervention on the gross mortality cannot be deduced from this series, because only fatal cases were included, where the management was not operative at one stage or another (table 12). However, the literature, in general, accredits pelvic thrombophlebitis with a 50 per cent mortality, and at the same time, accredits operative intervention with the same mortality. Most authors adopt the attitude that "operative recoveries" merely represent patients who would have recovered without the operation, so that the gross mortality is unchanged by operation.

TABLE 12
ANALYSIS OF CASES

Cases not operated upon				30
Deaths	30*	Mortality	100%*	
Cases operated on				11
Deaths	4	Mortality	36.3%	
Cases of hysterectomy with ovarian and iliac vein ligation				
Deaths	1	Mortality	100%	
Cases of ovarian vein ligation				5
Deaths	2	Mortality	40%	
Cases of vena cava ligation				5**
Deaths	1	Mortality	20%**	

*Since cases were selected from death files, this is necessarily so, and does not indicate the true mortality, without operation.

**Three additional cases recently, raise the number to eight vena cava ligations, with no further deaths, giving a gross mortality of 12.5 per cent.

Study of these cases, and other reported series, would indicate that venous ligation, in the past, has been too late in the course of the disease, and has been entirely too conservative. Observe the difference in the mortality where more radical ligation is done. One of the cases of ovarian vein ligation was done four weeks after the onset of chills. Postmortem showed that the thrombi had extended into the renal vein, and inferior vena cava. In this instance, operation had been deferred too long, and the proce-

dures had been too conservative. The patient died of the disease, not because of the operation. The same applies to the other case of ovarian vein ligation. Note this however; hysterectomy in these cases carries a high mortality, and should not be done, whenever it can be avoided.

The one death following inferior vena cava ligation was inevitable. Operation was decided on despite the moribund condition of the patient, when first seen. She had applied for treatment too late, but notwithstanding the fact that an operative mortality would be counted against the procedure, ligation was done to afford the patient her only possible hope. Death occurred at the termination of the operation.

CONCLUSIONS

1. Pelvic thrombophlebitis is both frequent and serious.
2. The diagnosis is difficult, even at autopsy.
3. Delivery, abortion, operation, and irradiation are the most frequent precursors.
4. No age group is exempt, except, perhaps childhood.
5. Repeated aerobic and anerobic blood cultures are necessary to establish the etiology. *Staphylococcus aureus*, and non-hemolytic streptococcus are frequent offenders.
6. The uterine veins, iliac veins, and inferior vena cava are frequently involved.
7. Pulmonary infarction is extremely common, and should be looked for, especially by employing the x-ray.
8. Ligation of the inferior vena cava results in a lowered mortality, as compared to other operative procedures.
9. Delay in operation, and over-conservatism result in unnecessarily high mortality.

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AUTOAGGLUTINATION, COLD AGGLUTINATION, PSEUDOAGGLUTINATION AND THE Rh FACTOR:

FACTORS OF PRACTICAL IMPORTANCE IN THE TRANSFUSION OF BLOOD

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Every physician knows the frequency with which reactions follow transfusions of apparently well matched blood. Every intern and laboratory technician knows that incompatibilities on direct matching of patients with donors of the same blood group are not rare. The minor reactions are overlooked, but in many cases they are only regretted and not explained. The technician reports the donor incompatible and goes on with the next matching, not stopping to determine why a donor of the same group should not match. Consideration of the factors discussed below will explain many intra-group incompatibilities and will prevent the occurrence of many post-transfusion reactions.

AUTOAGGLUTINATION AND COLD AGGLUTINATION

Landsteiner showed some years ago that the sera of practically all persons agglutinated their own cells at 0° C. "Pathological" cold agglutinins, also called "autoagglutinins," "panagglutinins," and "autohemagglutinins" differ from these normal cold agglutinins only in manifesting themselves at a higher temperature and in their frequent association with pathologic states. The agglutination at this higher temperature is due to an increase in titer of the normal cold agglutinin and not to any change in its essential nature.

The cold agglutinin or autoagglutinin is a true agglutinin, independent of the isoagglutinins of the common blood groups. It is non-specific: serum containing autoagglutinins will agglutinate not only its own cells but also the cells of all the four blood groups and cells of many laboratory animals. Hence the name "panagglutinin." The active principle may be absorbed by the patient's own cells or by group O cells,

which contain no isoagglutinogens. It is effective in agglutinating red cells after dilution, usually to 1:4, sometimes as high as 1:2000. These two latter characteristics help rule out pseudoagglutination, or excessive rouleaux formation.

Boxwell and Bigger⁵ in 1931 proposed an admittedly arbitrary definition of "autohemagglutination": "a clumping of erythrocytes into irregular masses visible to the naked eye, occurring in the presence of an individual's own serum, without bacterial action, at air temperature and reversible at body temperature." They reviewed the literature up to that time and accepted 22 cases as fulfilling these criteria. Reisner and Kalkstein,¹⁴ in 1942, brought the collection up to date with a total of 54 cases. The cases reported here for illustration add two more.

However, this rigid definition, which was constructed to exclude pseudoagglutination and the Thomsen phenomenon (agglutination due to bacterial action) really obscures the actual frequency and practical importance of the autoagglutinins. As noted above, practically all persons show autoagglutination at very low temperatures. The titer of these agglutinins may be raised by many different pathologic processes, or in some apparently normal individuals, to show agglutination at higher temperatures. Only occasionally is the titer high enough to make the agglutinin effective at room temperature. (Room temperature varies with different investigators: Boxwell and Bigger gave 16° C.; others have given as high as 26° C.). In Reisner and Kalkstein's recent case autoagglutination occurred at 37° C.

The pathologic conditions in which autoagglutinins effective at room temperature have been reported include: hemolytic anemias, including those caused by sulfonamides; severe liver disease; absorption of hematomas; streptococcal infections; kala-azar; multiple myeloma; and poisoning by hydrocarbons, such as benzene. It is noted that most of these conditions are associated either with increased blood destruction or increase and/or alteration of the plasma

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proteins. Supposedly the destroyed red cells act as an antigen and stimulate the formation of appropriate antibodies. Alterations in the plasma proteins may increase the titer of the autoagglutinin or alter the conditions under which it acts; but also may confuse the reaction by increasing the tendency to pseudoagglutination.

Besides these conditions, which are the most frequent ones associated with autoagglutination at room temperature, a number of other more varied conditions are associated with an increase of the autoagglutinin titer to a lesser degree. Belk's³ quantitative investigation of a large series of patients indicates that one patient in five who is sick enough to need a transfusion will have in his blood autoagglutinins of sufficient strength to make post-transfusion reaction a possibility. These autoagglutinins will not be apparent in the routine cross-matching as they are active only at a low temperature.

According to many authors, the significance of the autoagglutinins lies in the possibility of their confusing typing and matching reactions. For example, as illustrated in case 1 below, in testing the serum of a patient containing autoagglutinins active at room temperature, the serum might be erroneously classified as belonging to group O, since it would agglutinate the test cells of both groups A and B. Likewise if unwashed cells, or cells washed at room temperature were used in the typing the patient might be erroneously classified as group AB, since the cells would agglutinate in both A and B test sera because of the absorbed autoagglutinin. Similarly no donor would be found compatible if serum collected at room temperature or unwashed cells were used in the cross-matching. A true reaction could only be obtained by some process designed to free the cells or the serum of the autoagglutinin: (1) Using serum separated at 0° C., at which temperature the autoagglutinin is most active and would be absorbed on the patient's own cells; (2) using cells washed several times in warm (40° C.) saline, at which temperature the autoagglutinin is inactive and can be removed;

(3) carrying out typing and matching reactions in an incubator at 37° C., at which temperature the autoagglutinin is inactive. The following case illustrates how autoagglutinins may cause confusion in typing and matching:

CASE No. 1

A. F., a 6 year old female, was admitted to the French Hospital on May 14, 1942. Two weeks previously she had a typical attack of acute lobar pneumonia of the right upper lobe. She was treated in her home with sulfathiazole, which brought marked apparent improvement. However, dulness and rales persisted in the right upper lobe and she continued to have low grade fever. History, physical findings, and roentgenograms indicated in addition a congenital malformation of the heart, probably interventricular septal defect. She was a pale, fragile child, but apparently well on admission. Chest plates showed an area of pneumonitis in the lower portion of the right upper lobe, suggestive of the consolidation of pneumonia. The tuberculin test was negative. Chest plates 12 days later showed no change from previous films. The patient was discharged with a diagnosis of unresolved pneumonia.

Blood studies: Red blood cells 3.18 million; white blood cells 7500. Thin smears were made without difficulty. Thick smears for malaria could not be made at room temperature because the red cells rapidly grouped themselves into large irregular clumps. The patient's red cells, washed at room temperature, were agglutinated by both A and B test sera at room temperature (20° C.), indicating that the patient belonged to group AB. The patient's serum, separated at room temperature, agglutinated test cells of both groups A and B, indicating, to the contrary, that the patient belonged to group O. However, the patient's serum was found to agglutinate her own cells, and also the cells of group O at room temperature. This agglutination of the patient's own cells and group O cells, which occurred readily at room temperature, was reversed by incubation at 37° C. When the patient's cells were washed with warm saline (40° C.) and tested with A and B sera; or when the typing was carried out in the incubator at 37° C., no agglutination occurred. When the patient's serum was separated from its cells by centrifuging in an ice pack it did not agglutinate group O cells; or the cells of the patient herself, if they had been washed in warm saline. When the patient's serum, separated at room temperature, was mixed with an equal volume of cell wash of group O cells and then separated in an ice pack it did not agglutinate group O cells or the patient's own cells which had been washed in warm saline.

Obviously the patient's serum contained an autoagglutinin, active at 20° C. and in-

active at 37° C. The patient really belonged to group O, but the typing reaction was at first confused by autoagglutinin absorbed on the red cells causing agglutination of the patient's cells in test sera of groups A and B. True reactions could be obtained by removing the autoagglutinin by the methods described above; or by absorbing it on group O cells, which contain no isoagglutinogens and therefore will not alter the isoagglutinins of the serum.

Although the confusion of typing and matching reactions makes the autoagglutinins sufficiently important to warrant consideration, the author emphasizes the conclusions of Belk³: that autoagglutinins account for the majority of intra-group incompatibilities and the majority of post-transfusion reactions. Belk recommends that no more than 100 c. c. of blood be given at any one time to a patient showing autoagglutination. That reactions may occur in a patient showing autoagglutination and receiving a transfusion of blood demonstrated compatible at room temperature is illustrated in the following case:

CASE No. 2

Mrs. R. C., 86 years old, was admitted to the French Hospital on May 9, 1942, after a fall on her hip. The clinical diagnosis, confirmed by roentgenograms, was impacted fracture of the neck of the right femur. Light traction was applied and the patient was allowed to sit up the next day. Traction was replaced by a brace two weeks later. However, the hip never became painless and good function never returned. The patient became progressively weaker; developed decubital ulcers; and died 6 weeks after admission of hypostatic pneumonia.

Blood studies: Three weeks after admission the patient's red cell count was 2.20 million and transfusion was ordered. The patient's cells, washed at room temperature, showed agglutination at room temperature in test sera of both groups A and B, indicating that the patient belonged to group AB. Three group AB donors were cross-matched with the patient using cells washed at room temperature and sera separated at room temperature. The patient's cells were not agglutinated in the sera of any of the donors. The patient's serum agglutinated the cells of two donors. The third donor was apparently compatible. Blood from this donor was given to the patient by the indirect method. When 100 c. c. had been introduced, in the course of an hour, the patient had a chill with a rise in temperature to 102° F. Immediately after the

chill occurred further blood studies were carried out. The patient's serum, separated at room temperature, was found to agglutinate the donor's cells and the cells of all the human blood groups at 16° C. or below. These agglutinations reversed on warming to 20° C. or higher. The patient's cells, washed at room temperature, were found to be agglutinated at 16° C. by the sera of all three of the group AB donors previously tested; these agglutinations reversed on warming. The patient's cells, washed at room temperature, were agglutinated at 16° C. by the patient's own serum; the reaction reversed on warming. The patient's cells were washed 6 times in saline at 40° C. to remove the autoagglutinin which was obviously present. These cells were still agglutinated by test sera of both groups A and B, at room temperature and 37° C., but did not agglutinate in the sera of any of the group AB donors, even at 5° C. The patient's serum, when separated from the patient's cells at 0° C., did not agglutinate the patient's own cells, or the cells of any of the human blood groups at temperatures as low as 5° C. The autoagglutinin could also be absorbed from the patient's serum by mixing with an equal volume of group O cells and separating at 0° C.

It is obvious that this patient's serum contained autoagglutinin of sufficient strength to be consistently active at 16° C. This autoagglutinin was responsible for the intra-group incompatibility of the first two donors; and probably for the post-transfusion reaction. It did not, however, confuse the typing reaction. The cells, when freed of autoagglutinin, still showed group AB reactions. That the patient really belonged to group AB is confirmed by the absence in the patient's serum of isoagglutinins for the cells of other groups after the autoagglutinin was absorbed either by the patient's own cells or group O cells, which do not contain isoagglutinogens. If 16° C. may be accepted as air temperature, as given in the original work of Boxwell and Bigger, this case also fulfills their criteria for autohemagglutination.

PSEUDOAGGLUTINATION

Pseudoagglutination, which is another name for excessive rouleaux formation, is capable of causing confusion in blood typing. It has not been demonstrated to have any influence of itself in the production of post-transfusion reactions. As indicated by its name, no true agglutinin is concerned in the process. Absorption cannot be dem-

onstrated. For practical purposes, pseudo-agglutination may be distinguished from true agglutination by its inactivation by slight dilution (1:2 or 1:4) and agitation; and by careful microscopic examination of the clumped red cells. For the latter criterion the author can certainly do no better than to refer the reader to the illustrations accompanying Coca's paper,⁷ which are also reproduced by Wiener.¹⁵

THE Rh FACTOR

Landsteiner and Wiener¹⁰ in 1940 first demonstrated an agglutinable factor (agglutinin) present in human blood which was recognized by testing human red cells with the sera of rabbits previously immunized by the injection of Rhesus monkey blood. Most humans (85 per cent) were found to possess this agglutinin and were designated Rh positive. The rest (15 per cent) lacked this agglutinin and were designated Rh negative.

Since then it has become apparent that the transfusion of an Rh negative patient with Rh positive blood may cause the production of anti-Rh antibodies against the introduced Rh agglutinin. If the patient then receives a second transfusion of Rh positive blood a reaction may occur. There are several explanations why such reactions are not more frequent: (1) Not all of the 15 per cent of persons who are Rh negative are able to produce anti-Rh antibodies when Rh positive blood is introduced; (2) subsequent transfusions of Rh positive blood are not given; (3) the antibodies, once produced, decrease in titer and finally disappear; (4) these reactions are laid to other causes.

Additional practical importance has been given to the Rh factor by the discovery of its role in the etiology of erythroblastosis fetalis. Levine and Stetson¹¹ suggested in 1939 that a dominant immunizing property in the blood and/or tissues of the fetus was inherited from the father in cases of erythroblastosis fetalis. Levine, Burnham, and others^{6, 12, 13} showed in 1941 that this dominant immunizing property was the Rh agglutinin. Levine showed that 91 per cent of mothers of infants with erythro-

blastosis were Rh negative, in contrast to the normally expected 15 per cent; and that 100 per cent of the infants and fathers were Rh positive. The fetus inherits from its father an antigen, the Rh agglutinin, which is found in the fetal red cells but not in the red cells of the mother. This antigen from the Rh positive fetus gains access to the mother's blood and stimulates the formation of anti-Rh antibodies. These antibodies, like other maternal antibodies, pass easily through the placenta and attack the fetal red cells, producing erythroblastosis fetalis. Thus a woman who is pregnant, or has been recently pregnant, may possibly have antibodies against Rh positive cells without having had a previous transfusion. Should such a woman receive a transfusion of Rh positive blood these antibodies would agglutinate and hemolyze the transfused cells, causing a reaction. Rh studies are indicated when a transfusion is to be repeated and in any case in pregnancy or the puerperium.

Anti-Rh antibodies are only rarely evident in routine cross-matching at room temperature. The reaction is most pronounced at ice box temperature. Accordingly these reactions may occur between bloods of the same group, in spite of an apparently compatible cross matching at room temperature, as illustrated in the following case:

CASE No. 3

Mrs. C. A., 33 years old, was admitted to the French Hospital on February 21, 1942. She had two children living and well. Her last pregnancy had ended in abortion, cause unknown, at the third month. At the time of admission she was in her eighth month of gestation. For the previous three months she had had intermittent vaginal bleeding, usually after exertion. About two hours before entering the hospital she felt a violent fetal movement, which was followed by gushing, painless hemorrhage amounting to about 300 c. c. Several clots were removed from the vagina but no further bleeding occurred. Physical findings were those of a woman about seven and a half months pregnant. Her pulse was 84 per minute. Abdominal palpation indicated an ROP position of the fetus. Fetal movements were felt. Fetal heart tones were heard at a rate of 125 per minute. Roentgenograms showed pregnancy of seven and a half to eight months' duration with cephalic presentation and fetal spine to right. Soft tissue films and

cystogram showed no evidence of placenta praevia. The next day no fetal movements were felt and no fetal heart tones were heard. The patient was matched for transfusion and discharged. She was readmitted seven days later, and after a labor of only a few hours delivered a macerated fetus by frank breech. The fetus showed no enlargement of the liver or spleen and no jaundice. No autopsy was performed and no studies of the fetal blood were made. The placenta showed several old infarcts. On the maternal surface was a well attached blood clot covering about one-third of the placental area. The umbilical cord was very hemorrhagic and swollen. Postpartial bleeding was small in amount but the patient appeared pale and weak. Her pulse was 100 per minute. She was matched again for transfusion. Matching was carried out at room temperature using cells washed at room temperature. Over the course of one hour, 550 c. c. of blood were given to the patient by the indirect method from an apparently compatible donor. Almost as soon as all the blood had been given the patient had a hard chill and her temperature rose to 104.2° F. She was restless, air-hungry, disoriented, and talked irrationally. Her pulse was 160 per minute. Her blood pressure was 75/30. Coramine and an infusion of normal saline were given. Within eight hours her temperature fell to normal. She was discharged seven days later. Three months later this case was brought to my attention and further studies were made on the patient and the donor.

Blood studies: Both the patient and the donor were found to belong to group O. Cross-matching showed the donor's blood to be compatible at room temperature. When crossmatching was carried out in the ice box at 10° C., it was found that the patient's serum agglutinated the donor's cells readily. The patient's cells were not agglutinated by the donor's serum in the ice box. Autoagglutinins were not demonstrated in either the patient or the donor.

Although erythroblastosis fetalis was not demonstrated in the fetus, and although the husband was not available for Rh studies, this case is typical of the Rh reactions that may occur in a pregnant or puerperal woman.

Therefore it is necessary to test the donor's cells against the patient's serum at icebox temperature.¹⁶ At the same time the patient's cells must be tested against his own serum at ice box temperature in order to rule out an agglutination due to cold agglutinins. If the patient's cells are agglutinated in his own serum, the autoagglutinin must be removed by absorption with the

patient's own cells; and separating the serum at 0° C. by centrifuging in an ice pack. The Rh agglutination may then be repeated, again with a control of the patient's cells and serum.

CONCLUSIONS

1. Cells washed in warm saline, to remove possible autoagglutinins, should be used in typing and matching blood.

2. Before a patient receives a transfusion the patient's serum should be tested against his own cells at ice box temperature to detect autoagglutinations which may cause a post-transfusion reaction. If autoagglutinins are demonstrated the patient should receive blood only in small amounts.

3. When a transfusion is to be repeated, or when a transfusion is to be given in pregnancy or the puerperium, compatibility tests should be made at ice box temperature in order to exclude Rh agglutinins.

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THE EMBLEMS OF MEDICINE

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BATON ROUGE

Man is an animal that symbolizes and who often lives, thinks and acts in turns of symbols. Two symbols have been handed down the ages as the distinctive emblems of the medical profession. They are the magic wand, or Caduceus, of Mercury and the knotted staff and serpent of Aesculapius. It should be of interest to every physician to learn of the origin and significance of these medical emblems, and how they came to be used by men of the healing art. The general public has become familiar with the emblems, as displayed by the physicians on their automobiles, and insignia worn by the medical branches of the U. S. Army.

Man's history goes back into the days of mythology. Medicine was there with man in those mythologic times, when most of life was a mystery, and man in his wonderment worshipped that great expanse of his unknown and called each wonder a god. The emblems of medicine originated in those mythologic days of many gods.

THE CADUCEUS

The Caduceus which is a wand or slender staff around which are loosely coiled two snakes has at its head two outspread wings. The definition of Caduceus means "herald's wand." The Caduceus was given by the god physician Apollo to Mercury upon the appointment of Mercury as an ambassador to mediate between the gods and man. It has become the magic wand of Mercury, the heavenly messenger of the gods. Mercury is also known to some as the God of Commerce. The Caduceus is a wand from an olive branch signifying peace and the outstretched wings at its head indicate

speed and fleetness for the messenger Mercury. The two snakes intertwined about it indicate wisdom for the ambassador. The Roman army used it as a flag of truce, a symbol of neutrality or peaceful transactions between opposing armies on the battle front. There is no indication that the Caduceus was ever thought in those days to be the emblem of the healing art; however, the fact that it was given to him by Apollo, the god physician, has given rise in some quarters that the Caduceus has a medical significance. It was not until the reign of King Henry VIII that Sir William Butts (....-1545), personal physician to the king, adopted the Caduceus as his emblem for the medical profession. This is the first record of a physician using the Caduceus for this purpose. A few years later Dr. John Caius presented to Granville and Caius College of Cambridge, England, a silver Caduceus as an emblem of medicine.

THE STAFF OF AESCULAPIUS

There lived in the early days of Greece a great physician by the name of Aesculapius, son of the physician god Apollo, who spent his life tirelessly in the service of the sick. His skill in the art of healing has placed him forever before us as the Father of Medicine.

The staff of Aesculapius, a stout knotted staff with a single snake closely entwined around it, is medicine's oldest emblem. The staff was stout so that the lame could lean upon it; it was knotted to indicate the knotty problems of illness and it had wound about it a snake, symbol of healing, renewal of youth and prolongation of life.

The association of the serpent with medicine roots deep in antiquity of the race. The ancient sign of wisdom and healing was the snake, which represented immortality or renovation of life and vigor, typified by the periodic shedding of its skin.

Several legends have grown up in explanation of how the snake became an attribute of Aesculapius. One states that a snake came to him bearing in his mouth a magic herb by means of which he was able to perform all sorts of medical miracles.

Another one has it that Aesculapius at the bedside of his patient, Glaucus, had a snake come to him and twine itself about his staff, imbuing him with wisdom and enabling him to effect a cure. It can be readily understood why it is that all the pictures and statues of Aesculapius show him holding a snake or grasping a stout knotted staff around which is a tightly clinging snake.

With this historic mythologic background, physicians naturally feel that they have a unique and incontrovertible right to the use of the staff of Aesculapius as a very significant emblem of the profession of medicine.

CONCLUSIONS

Two snakes closely entwined about a staff, with or without wings attached is properly a Caduceus or staff of Mercury. One snake about a knotted staff represents the staff of Aesculapius.

The use of either emblem seems to be highly appropriate to medicine, although the staff of Aesculapius seems to have the most ancient and significant background while for balance and artistic effect, the Caduceus may well be preferred.

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THE STATE MEETING

Elsewhere in the Journal there appears a notice to the effect that the president and the executive committee have decided that the annual meeting of the State Medical Society this year should be largely a business meeting and without any scientific program. The reasons for this action of course are obvious. Louisiana has sent a very large number of its doctors to the armed services, the men who are left behind are laboring at full speed and doing an enormous day's work. In many of our

localities the doctors have been so reduced in number that it would be utterly impossible for them to leave their patients except for a very short period of time. Furthermore, the gasoline and rubber situation is such that it will help to conserve these two essential substances, more particularly rubber, if the meeting is a relatively limited one in size.

The Journal Committee feels that in spite of the deletion of the scientific program, that there will be a certain number of physicians in the state who would like to have presented their observations on diseases they have seen or special studies that they may have made. The Journal wishes to offer its pages to any doctor who will not be able to read a paper before the State Meeting, to have it published in the Journal. In this way the material would reach the eyes if not the ears of the medical profession; some excellent clinical studies would not be lost but would become known. If, therefore, any physician in the state has material he would like to publish in the Journal, we trust that he will not be too modest but will submit it to the editor for publication.

GRADUATE MEDICAL ASSEMBLY

For the seventh successive year the New Orleans physicians will present their annual medical assembly, this year, in the week of March 15. The meeting promises fair to exceed the successful meetings that have been held in the past. The officers of the Graduate Medical Assembly have prepared a most interesting program of lectures, clinics, conferences, motion pictures and round table discussions.

To participate in this program there is a list of superb guest speakers. Without exception every one of these speakers is a man who is outstanding in his specialty. In pathology, for instance, Dr. Howard T. Karsner, whose textbook on pathology is so popular and who is professor of pathology at Western Reserve University, is going to conduct the clinico-pathologic conference, as well as to lecture on two subjects of general interest. The medical man who is to

be associated with Dr. Karsner in this conference will be Dr. Louis Hamman. Those who have heard Dr. Hamman talk know he is a man tremendously well versed in medicine and he is a practitioner of medicine par excellence. In cardiology, Dr. Tinsley R. Harrison, professor of medicine at the new Bowman Gray School of Medicine, is down for four different presentations, each of which should be of interest not only to the cardiologist but to the general practitioner.

Dr. Robert J. Crossen of Washington University is a nationally known figure not only for his interest in general professional problems but also because of his textbook on gynecology which is used by most of the medical schools in the country. In obstetrics, Dr. Nicholson J. Eastman, who is obstetrician in chief and professor of obstetrics at Johns Hopkins, will talk on subjects which should prove profitable to each and every one of his listeners.

In pediatrics, Dr. Erling S. Platou of the University of Minnesota Graduate School, will have as his subject the treatment of acute meningitides, and human serum and plasma therapy in diseases of children. Dr. George B. Eusterman, of the Mayo Clinic, needs no introduction to gastroenterologists, nor to most physicians. The same might be said of Dr. Charles B. Huggins, professor of surgery at the University of Chicago, and Dr. Ralph I. Lloyd, president of the American Academy of Ophthalmology and Otolaryngology. Representing radiology will be Dr. Fred J. Hodges of the University of Michigan Medical School, another man known widely throughout the country as an outstanding radiologist. Dr. Warren H. Cole, professor of surgery at the University of Chicago and Major R. A. Griswold, professor of surgery at the University of Louisville, will represent their particular field. Other most prominent speakers will be Dr. Edwin W. Ryerson of Chicago, Dr. James G. Townsend of the National Institute of Health, Lt. Col. Roy G. Spurling, a neurosurgeon now in active service, and Lt. Col. Edgar V. Allen, who is also in the army as medical consultant

for the Seventh Service Command. In otolaryngology Dr. John J. Shea of Memphis needs no introduction to Southern doctors. Lastly, Sister Elizabeth Kenny will give two talks on the subject that she knows so well, namely poliomyelitis.

With the group of doctors such as have been enumerated above as the basis for the program of this annual medical assembly, one can say without hesitation that the meeting will be one of the outstanding educational medical meetings that will be held in this country this year. It might be well to call to the attention of the Louisiana medical profession the fact there will not be any scientific meeting of the Louisiana State Medical Society this year and this present meeting might well act as a substitute to replace the usual scientific program of the State Society.

It is realized and appreciated that doctors are busy now, busier than they have ever been before but it would be well for them to take the opportunity of attending this meeting to learn and at the same time to have a few days of rest and relaxation from their very strenuous day by day routine activities.

THE CLINICAL USE OF THE SULFONAMIDES

The sulfonamides have become ever increasingly popular in the treatment of any disease or disorder which is associated with fever. They are being used extensively for prophylactic purposes and have, under certain conditions, proved of tremendous value, but merely because a patient does have an increased temperature or is threatened with a sore throat, is no reason why the sulfonamides should be given to that particular individual. There are certain conditions in which the sulfonamides are of no value and in fact they may be actually dangerous. Potentially they are dangerous therapeutic agents and should not be given without very definite indications and reasons.

In some conditions the sulfonamides are not only useless but may make the patient unhappy and miserable and may actually

complicate his illness. The doctor should not be moved by the incorrect information that is so general among laymen that the sulfonamides are useful in every type of febrile disorder. He should not hesitate to explain to the patient's family that in certain infections the drugs are actually contraindicated. Such diseases include virus pneumonia, influenza, the common cold, the acute exanthemata, infectious mononucleosis, typhoid and typhus fever, infections due to neurotropic virus, the toxic expressions of scarlet fever and diphtheria, and puerperal infections caused by anerobic streptococci. In tularemia, brucellosis and acute rheumatic fever the sulpha drugs are probably totally useless, certainly harmful in the last mentioned disease.

The sulfonamides have been given repeatedly for sore throats. They are of very little value against the hemolytic streptococcus and in localized infections, once they are definitely encapsulated, they are ineffective.

It must be stressed emphatically that the sulfonamides should not be used promiscuously. If a severe infection does exist with high fever and a bacteriologic diagnosis cannot be made, then one is justified in making use of these valuable drugs. It is recommended, that they be used in spite of the fact that there is a 0.2 per cent mortality from the sulfonamides. With severe disease a trial is justified. If, at the end of three days with ample dosage of one or another of the preparations, there is no improvement in the patient then it is wise to discontinue the use of the preparation, assuming of course that dosage is adequate and the patient is actually taking the drug. Blood sulfonamide concentration tests are frequently unavailable to the practitioner. An excellent response to therapy is probably as valuable proof that the blood concentration is at the right elevation as definite figures for the concentration. If the patient does not respond to the drug in three days or when the output of the urine cannot be accurately estimated because of incontinence or poor renal function, then

blood concentration levels are definitely indicated and if they cannot be obtained it is advisable to cease using the sulfonamides.

The preparation of choice for nearly all infections is sulfadiazine, because of its lack of side effects and because of its relatively fair excretion. Even in the treatment of meningitis, in spite of the fact that the concentration of the drug in the spinal fluid is lower than would be sulfanilamide or sulfapyridine which have been advocated for the treatment of pneumococcal meningitis or streptococcus meningitis, the clinical result with sulfathiazole has been efficacious and has given better results than the first two preparations. Sulfathiazole is probably the best preparation in the handling of staphylococcal infections and in the management of the urinary tract and venereal infections as well as anthrax and subacute bacterial endocarditis.

The problem arises of how long to continue with the sulfonamides. A general rule is to continue full dosage until 48 hours after all evidence of infection has gone or in the instance of pyogenic disorders until localization has taken place and adequate drainage has been secured. In the instance of diseases which are cured by sera and they are used, it should be continued until sufficient anti-body has been formed to effect a cure. Whenever it is impossible to determine that localization of infection has taken place as in osteomyelitis or mastoiditis, therapy should be continued for a very much longer period of time after the subsidence of temperature. It is advisable also in the instance of streptococcal or staphylococcal infections to continue for a much longer time than with pneumonia, for example. In erysipelas and cellulitis, even after the temperature has fallen to a normal line, the drug should be continued until after the subsidence of the local disease expression.

Complications of sulfonamide therapy will not be discussed but it should be emphasized that patients should be questioned to find out if they have been given any of

these preparations prior to the institution of the proposed therapy. Patients should be questioned as to disturbances of renal function such as nycturia and the history of a previous nephritis, and if possible, a

red and white blood cell count should be done. Under any circumstance while the patient is taking the drug he should take large quantities of fluid and the urinary output should be carefully observed.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

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| February 1. | Orleans Parish Medical Society, Board of Directors, 8 p. m. | February 19. | I. C. R. R. Hospital Staff, 12:30 p. m. |
| February 2. | Eye, Ear, Nose and Throat Staff, 8 p. m. | February 23. | Baptist Hospital Staff, 8 p. m. |
| February 3. | Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Mercy Hospital Staff, 8 p. m.
Clinico-pathologic Conference, Marine Hospital, 7:30 p. m. | February 24. | Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
French Hospital Staff, 8 p. m.
Hutchinson Memorial Clinic Staff, 8 p. m. |
| February 4. | Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
Baptist Hospital, Executive Meeting, 8 p. m. | February 25. | Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m. |
| February 8. | Orleans Parish Medical Society, Scientific Meeting, 8 p. m. | February 26. | L. S. U. Faculty Club, 8 p. m.
New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m. |
| February 10. | Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Women's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.
Touro Infirmary Staff, 8 p. m. | | |
| February 15. | Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m. | | |
| February 16. | Charity Hospital Medical Staff, 8 p. m. | | |
| February 17. | Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15, p. m. | | |
| February 18. | Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m. | | |

During the month of January the Society held two meetings. The first meeting was the installation meeting, and was held January 11 on the Jung Hotel roof. At this meeting the following officers were installed: Dr. H. B. Alsobrook, president; Dr. Edwin L. Zander, president-elect; Dr. George H. Hauser, first vice-president; Dr. Philip H. Jones, Jr., second vice-president; Dr. Walter Levy, third vice-president; Dr. Daniel J. Murphy, secretary; Dr. A. V. Friedrichs, treasurer; Dr. Max M. Green, librarian; Drs. Paul B. Lacroix, E. L. Leckert, and E. J. Richard, additional members of the Board of Directors. The second meeting was a regular meeting. At this meeting Dr. C. Anderson Aldrich, Chief of staff, Children's Memorial Hospital, Chicago, Illinois, addressed the Society; his subject was, The Development of Usefulness in Children.

Drs. Rena W. Crawford and G. Richarda Williamson presented a paper on Anemia in Childhood at the December meeting of the Baptist Hospital Staff.

Dr. H. Theodore Simon presented a paper on the Treatment of Fractures of the Neck of the Femur at the December meeting of the Hotel Dieu Staff.

DANIEL J. MURPHY, M.D.,
Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

ANNUAL MEETING OF THE LOUISIANA
STATE MEDICAL SOCIETY

1943, at 7:30 p. m. at the St. Frances Sanitarium
Monroe, Louisiana.

GLENN T. GALLASPY, M. D.

President

G. A. VARINO, M. D.

Secretary-Treasurer

DR. MATAS HONORED

On Sunday, December 21, 1942, Dr. Rudolph Matas was presented the medal of the Nu Sigma Nu Degree of Merit. This award, the highest honor conferred by Nu Sigma Nu, is the culmination of approximately thirty years of service which Dr. Matas has rendered the fraternity as a faculty member of Beta Iota Chapter of the Tulane Medical School, including president of the National Honorary Council in 1935.

The medal was presented by Dr. O. C. Cassegrain (Tulane, 1915), president of the alumni group, at the local chapter house, following cancellation of the national convention which was to have been held in Denver, Colorado, in November. The only other recipients of the medal, all illustrious representatives of the medical profession in their respective fields, have been: Victor Vaughan, Nicholas Senn, J. P. McMurrich, W. H. Welch, F. G. Novy, G. C. Huber, W. H. Park, J. M. T. Finney, T. H. Sollman, and James Bryan Herrick.

Following the presentation, Beta Iota Chapter of Nu Sigma Nu entertained members of the faculty of the Tulane Medical School and friends at a reception in Dr. Matas' honor.

TOURO INFIRMARY

The annual meeting of the Medical Staff of Touro Infirmary was held on Wednesday, January 13, at 8 o'clock in Lecture Room A. The scientific program consisted of a clinico-pathologic conference with a clinical discussion by Dr. A. F. Hebert. Dr. Donovan C. Browne then discussed "The Patient Following Gastric Surgery," and the meeting was closed by the report of a case of Raynaud's disease presented by Dr. H. Mahorner. The annual election to the Executive Committee of the two representatives from the Staff was held and Dr. Sidney Copland and Dr. Waldemar Metz were selected.

The Executive Committee of the State Society has decided to dispense with the scientific program and entertainment features, and will have only a business meeting at the annual meeting of the Society in May. It thought this was a wise thing to do owing to the present conditions resulting from the war. The business meeting will be held the morning and afternoon of May 3, 1943, in Baton Rouge. On the evening of May 3 the Presidential Address, the Annual Oration, and the presentation of medal to the Retiring President will be held. Plans and other details are being arranged by the East Baton Rouge Parish Medical Society in co-operation with the Executive Officers.

A program covering all the details of the meeting will be mailed to every member of the State Society in adequate time for those interested. While this is a business meeting the Executive Officers would be glad to have all those who can attend this abbreviated convocation.

DUES OF MEMBERS IN SERVICE

At the last meeting of the Executive Committee of the State Society the question of collection of dues for members of the Society who are in the armed forces was discussed.

It was brought out in the discussion that the Rapides Parish Medical Society has adopted a policy whereby the dues for membership in the State Society are paid for the men in service by the doctors who are still in civilian practice. This was regarded, by the Executive Committee, as a constructive and patriotic plan and is referred to the various other component societies for consideration.

OUACHITA PARISH MEDICAL SOCIETY
MONROE, LOUISIANA

At the regular meeting of the Ouachita Parish Medical Society on December 3, 1942, the following officers were elected to preside for the year 1943:

Dr. Glenn T. Gallaspy, President

Dr. W. E. Jones, Vice-President

Dr. G. A. Varino, Secretary-Treasurer

The first meeting in 1943 was held on January 14, 1943, at 7:30 p. m. at the St. Frances Sanitarium, Monroe, Louisiana. A short program was had. A motion picture on "The Diagnosis and Treatment of Breast Tumors" was shown by Dr. A. D. Tisdale on behalf of the Medical Society. There being no further business before the Society, the meeting was adjourned.

The next meeting will be held on February 4,

BAPTIST HOSPITAL

The regular monthly meeting of the Clinical Staff of the Southern Baptist Hospital was held on Tuesday, January 26. The program consisted of a presentation of a case by Dr. E. A. Ficklen and one by Dr. J. T. O'Ferrall, both of which were generally discussed. Following the death report, election of officers for the coming year was held. This resulted in Dr. P. H. Jones being elected chairman; Dr. R. F. Sharp, vice-chairman; Dr. Joseph W. Reddoch, secretary; Dr. Joseph H. Wells, treasurer.

ANNUAL MEETING OF S.M.A.

The Council considered whether or not the Association should hold its meeting next year and where. It is the unanimous judgment of the Council that unless there are conditions which are not now evident that the Association should meet next year at its usual time. It was thought wise to leave to the Executive Committee of the Council the selection of the meeting place, this to be done at their meeting to be held about six months hence.

At a recent meeting of the Association, Dr. T. A. Watters of New Orleans, was elected Chairman of the Section on Neurology and Psychiatry; Dr. Grace A. Goldsmith of New Orleans was elected Vice-Chairman of the Section on Medicine; Dr. Nathan H. Polmer, New Orleans, was elected Vice-Chairman of the Section on Physical Therapy; Dr. John T. Sanders, New Orleans, was made Vice-Chairman of the Section on Gynecology; Dr. Joseph S. D'Antoni, New Orleans, was elected Secretary-Treasurer of the American Society of Tropical Medicine; Dr. Ernest Carroll Faust, New Orleans, was made Secretary of the American Academy of Tropical Medicine.

Dr. Virginia E. Webb, former chief of the Division of Maternal and Child Welfare of the State Department of Health, resigned from this position and has moved to Mobile, Alabama, to go into private practice.

"FOUNDATION PRIZE"
OF THE
AMERICAN ASSOCIATION
OF
OBSTETRICIANS, GYNECOLOGISTS AND
ABDOMINAL SURGEONS

The award which shall be known as "The Foundation Prize" shall consist of \$150.00.

Eligible contestants shall include only (a) interns, residents, or graduate students in Obstetrics, Gynecology or Abdominal Surgery, and (b) physicians (with an M. D. degree) who are actively practicing or teaching Obstetrics, Gynecology or Abdominal surgery.

For additional information write Jas. R. Bloss, M. D., Secretary, 418 Eleventh Street, Huntington, West Virginia.

OPENING OF REST HOME FOR TORPEDOED SEAMEN

On Monday January 11, under the auspices of the United States Public Health Service, Mr. George H. Terriberry, Chairman of the New Orleans Port Area Committee, United Seamen's Service, and Captain Roger J. O'Sullivan, Regional Representative, Recruitment and Manning Organization, War Shipping Administration, a rest home for torpedoed seamen was opened at Pass Christian. This rest home is located at Camp Kittiwake, a truly beautiful site. The rest home is for the purpose of giving the torpedoed seamen an opportunity of recovering from the psychic trauma developing as a result of the experiences in being blown up by an enemy torpedo. It has been found that a week or two weeks of complete rest and relaxation will be of great psychological value to the men to whom our country is indebted to a tremendous extent. Too little attention has been paid to these brave seamen, and what little has been done for them is much too little.

The speaker of the occasion was Mr. Marshall E. Dimock, Director of Recruitment and Manning Organization.

INFECTIOUS DISEASES IN LOUISIANA

The Section of Epidemiology of the Louisiana State Board of Health shows that for the week ending December 12 there were reported 386 cases of syphilis, 151 of gonorrhea, 55 of chickenpox, 26 of pulmonary tuberculosis, and 13 of influenza. No one other of the reportable diseases occurred in the state in numbers greater than 10. There were, however, three cases of typhus fever reported this week among the unusual diseases, and five instances of malaria. The next week which closed December 19, the diseases occurring in double figures included 290 cases of syphilis, 82 of gonorrhea, 18 of mumps, 12 of pulmonary tuberculosis, and 11 of chickenpox. Two additional cases of typhus fever were reported this week and one of malaria. For the week which terminated the day after Christmas, there were listed 223 cases of syphilis, 104 of gonorrhea, 44 of measles, 14 of pulmonary tuberculosis. Another case of typhus fever and eight new malaria cases were found in this particular week. For the week ending January 2, there was some increase in the number of diseases reported in numbers greater than 10. For the first time in years there were more cases of gonorrhea reported than there were of syphilis, there being 239 this week, followed by 196 of syphilis, 25 of mumps, 17 of chickenpox, 13 of chancroid, 11 each of scarlet fever and pulmonary tuberculosis, and 10 of influenza. Two more cases of typhus fever and one more of malaria were reported this week. The explanation for the large number of cases of gonorrhea lies in the fact that 167 of these cases were reported from army camps. For the second week of the year which closed the 9th of January,

it is to be noted that there were reported 199 cases of syphilis, 38 of gonorrhea, 26 of pulmonary tuberculosis, 17 of mumps, 15 of chickenpox, 14 of pneumonia, 12 of whooping cough, and 10 of scarlet fever. Two cases of malaria were found this week, two of typhus, and four cases of meningitis.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week ending December 12 there were only 128 deaths in the city, as contrasted with 164 for the previous week, a quite sharp drop. These figures were divided, 81 white and 47 negro, including 15 deaths of children under one year of age. There was some increase in the number of deaths in the week which closed December 19. One hundred and forty deaths this week were apportioned 85 white, 55 negro, with 20 of the deaths occurring in children under one year of age, 13 of whom were colored babies. The week which ended December 26 found a greater number of deaths arising in the city than during the previous week, 15 more, as a result of 20 more white people who died the previous week and five less negroes. There were only 14 deaths in infants in this time. The first report for 1943 was poor, the 170 deaths representing a considerable increase over any week over a long period of time, but still considerably better than the three-year average for the corresponding week which was 194. There were fewer white deaths in the city, 97 in the white population expiring, but there were more negro deaths, 73 dying this week. There were exactly the same number of infant deaths as in the previous week. The first week of the new year which officially ended January 9 showed a slight decrease in the total number of deaths in the city. Of the 161 people dying, 108 were white and only 53 in the colored population, which was considerably below the three-year average. Strange to say that there were only seven infant deaths this week, divided four white, and three "all others."

WAR PRODUCTION BOARD ORDER AFFECTS VITAMIN CAPSULES

To conserve vitamin A supplies during wartime, W.P.B. order L-40 limits the content of capsules to 5,000 vitamin A units.

In compliance with this order, capsules of Mead's Oleum Percomorphum 50% With Viosterol now contain 83 mg. of oil, equivalent to 5,000 vitamin A units and 700 vitamin D units per capsule.

The new size capsule is now supplied in boxes containing 48 and 192 capsules—about twice the number of capsules without increase in price.

A DOCTOR'S PLEA IN WARTIME

The doctor's life, in times like these,
Is not exactly one of ease.

For, on the home front, each M. D.
Is busier than any bee!

He's shouldering the burden for
The other docs, who've gone to war.

This leaves your doctor precious little
Time to sit around and whittle.

And indicates the reason why
You ought to help the poor old guy.

HOW?

1. By keeping yourselves in the best of condition
Thus avoiding the ills that demand a physician.
2. By phoning him promptly when illness gives warning,
But—unless very serious—waiting till morning.
3. By cheerfully taking whatever appointment
He makes for prescribing his pills or his ointment.
4. By calling on him where he works or resides
Instead of insisting he rush to your sides.
(Of course, he'll come 'round when there's need for his service
But spare him the trip when you're nothing but nervous.)
5. And, last but not least, you can help in this crisis
By carefully following Doctor's advices.

* * *

If these commandments you'll adhere to
A doctor's heart you will be dear to!

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WOMAN'S AUXILIARY

This month we publish a letter from our State President, Mrs. Clarence B. Erickson. Let us read it carefully and resolve to give Mrs. Erickson our loyal support, so that, handicapped as she is by war conditions, the work of the Auxiliary may nevertheless go on successfully under her administration.

The letter follows:

Dear Auxiliary Members:

It is with deep regret that I feel that I cannot visit each and every auxiliary this year. Traveling conditions are such as to discourage my trying. Also I feel that it is necessary to conserve the income of the State Auxiliary as well as that of the individual chapters. There will no doubt be considerable loss of membership with resultant loss of income due to so many doctors being in service. However, I intend to keep in touch with all auxiliaries by mail although I realize that this is not as satisfactory nor pleasant as personal contact.

My message to you all large or small is to continue with the work that has been started and when possible to keep in touch with the wives of doctors in service. There are so many things you can do to bring cheer to these members. Do urge them to attend meetings and make them feel that they are still active members. In this way you are assured of an interested member when Victory is won and all return to normal life again.

The decision as to whether or not there will be a convention and the plans for it, if held, will be published in the Auxiliary News of the Journal.

To date very few contributions have been received for the Widows' Fund. As you know this is a new project, and we should exert ourselves to get it off to a good start. As time goes on this fund will be of untold benefit to many.

One of the most vital phases of Auxiliary work is our contribution to the Red Cross and all war work. If there is no Red Cross Chapter in your community try to organize one. There are so many ways in which women can help in Red Cross Work, namely; surgical dressings, home nursing, nurses aid, nutrition classes, etc. A group of auxiliary women would find any of the above not only inter-

esting but a great help to the war effort. A report on this work will be asked for in May.

If there is any way I can be of help to you please do not hesitate to write me.

My very best wishes for the New Year and success in your Auxiliary work.

GERTRUDE CAPPER ERICKSON, Pres.

The regular monthly meeting of the Woman's Auxiliary to the Orleans Parish Medical Society was held January 13, at the Orleans Club. At this meeting the following officers for 1943 were installed:

President—Mrs. Cassius Peacock.

First Vice-President—Mrs. Theodore Simon.

Second Vice-President—Mrs. Hermann Gessner.

Third Vice-President—Mrs. Henry Blum.

Recording Secretary—Mrs. Edwin Socola.

Corresponding Secretary—Mrs. Daniel J. Murphy.

Treasurer—Mrs. Jerome Landry.

Historian—Mrs. Carroll Gelbke.

Parliamentarian—Mrs. Otto Joachim.

Publicity Secretary—Mrs. William Kohlmann.

Past-President—Mrs. Paul Lacroix.

BOOK REVIEWS

The Hand, Its Disabilities and Diseases; By Condict W. Cutler, Jr., M. D., F. A. C. S. Philadelphia, W. B. Saunders Company, 1942. Pp. 572 illus. Price \$7.50.

Most conditions and diseases affecting the hand are surgical in nature. Even many constitutional diseases, such as vascular disturbances, thromboangiitis obliterans, Raynaud's disease, are of main interest to the surgeon. A book which attempts to encompass the clinical aspect of the diseases of the hand must of necessity cover a variety of conditions.

The author of this volume was successful in condensing information mainly to the practical aspect without being too brief. The book presents a first chapter on anatomy. This is surgical anatomy and practical anatomy and is accurate and sufficiently informative for the student to answer the usually proposed questions. Following this the author considers infections, then burns, wounds, injuries, fractures, repairs of tendons and other reconstructions, tumors and finally in brief the effect certain constitutional diseases have on the hand.

Illustrations are good though not very numerous. The text is authoritative and didactic. One of the notable pleasing deficiencies is the absence of too numerous quotations and repletive bibliography.

The author tempers his consideration of surgical indication with seasoned judgment. A foreign body in the hand is not just something there to be removed by the surgeon; rarely there are reasons for leaving it alone.

This book gives the student and practitioner the accurate information he needs about the hand.

HOWARD MAHORNER, M. D.

Shock: Its Dynamics, Occurrence and Management; By Virgil H. Moon, A. B., M. Sc., M. D. Philadelphia, Lea and Febiger, 1942. Pp. 324, illus. Price \$4.50.

This book is a concise, compact statement of the factual knowledge concerning the pathology of shock. This is of vital interest due to the present World War. He defines shock as a disturbance of fluid balance resulting in a peripheral circulatory deficiency which is manifested by a decreased volume of blood, reduced volume flow, hemoconcentration, and by renal functional deficiency. The book is divided into two parts. Part one is concerned with the vascular dynamics of shock, in which he considers "the physiologic and pathologic features of shock, its dynamics, its conditions of occurrence, blood chemical changes, similarities and distinctions between shock and the effects of hemorrhage, disturbances or renal function" and other characteristics are detailed. There

is a careful consideration of the present methods of interpretation of shock and experimental methods that have been employed in its production and detection. Part two is concerned with the prevention, recognition and management of shock. This section deals exclusively, as stated by the author, with the practical matters concerning these points. One chapter sets forth the most recent developments in the use of transfusion, plasma, serum, and blood substitutes in the treatment of hemorrhage and shock.

This is an excellent statement of the problem of shock and its treatment, which will be extremely useful to the student and practitioner.

LEROY J. KLEINSASSER, M. D.

Treatment in General Practice: By Harry Beckman, M. D. 4th ed. Philadelphia. W. B. Saunders Company, 1942. Pp. 1015. Price \$10.00.

The excellence of the three previous editions has won for this text a well established place in the working library of the practitioners of medicine. The same general plan of arrangement has been followed in this volume. The monographs are arranged according to disease groups, such as infectious diseases, and diseases of the gastrointestinal system. In each division, they are placed alphabetically. In the text of each of these there is an outline of the history, and diagnosis, followed by a fuller discussion of therapy, prophylaxis and other related data. Many prescriptions are included, these being in English and showing both the apothecaries' and the metric weights and measures. In the latter part of the volume there are excellent chapters on poisons, burns, diseases of the skin, sulfonamide toxicity, as well as the management of various symptoms such as insomnia, and hiccough.

One of the outstanding features of all of the editions has been the large number of quotations from outstanding clinicians and, in most instances, Dr. Beckman has consistently shown excellent judgment in his selections.

This volume is not intended to replace in the physician's library, the extensive systems of medicine or even the general texts on practice, but it is nevertheless more than a ready and valuable reference for the busy doctor in meeting his daily requirements for treatment. Altogether, it is excellent and continues to fill a long felt want.

OSCAR W. BETHEA, M. D.

The National Formulary: Prepared by the Committee of National Formulary by authority of the American Pharmaceutical Association. 7th ed. Washington, American Pharmaceutical Association, 1942. Pp. 690. Price \$6.00.

Many physicians do not realize the importance of this valuable work. It should be on the desk of

everyone practicing medicine and it will be found of assistance in direct ratio to the frequency with which it is used.

The first edition was published in 1888 by the American Pharmaceutical Association, and it was compiled to meet the definite need of standardizing the multitude of pharmaceutical products that were on the market and not included in the *Pharmacopoeia*. It contained monographs covering 435 such preparations.

The seventh edition has kept pace with the rapid advance in medicine and pharmacy. It includes 459 monographs on pharmaceutical preparations and 273 monographs on drugs and chemicals. As compared with the sixth edition, there are 97 additions and 51 deletions. Only a few changes have been made in the titles, 15 in the Latin and 15 in English.

This volume has the same legal status as the *Pharmacopoeia*. The original policy of the publishers is still adhered to with regard to its relation to the *Pharmacopoeia*. No item is included in both volumes. When for any reason a drug in the *Formulary* is included in the *Pharmacopoeia*, it is dropped from the *Formulary*, and when a drug is deleted from the *Pharmacopoeia*, if it is of sufficient importance it is eligible to being included in the *Formulary*. The busy physician will find here much valuable information about the drugs he is prescribing and many useful formulas that will assist him in getting his medicinal agents to his patients in the most efficient and acceptable form.

OSCAR W. BETHEA, M. D.

Starling's Principles of Human Physiology: Edited and revised by C. Lovatt Evans, D. Sc., F. R. C. P., F. R. S. LLD. Philadelphia, Lea and Febiger, 1941. 8th ed. Pp. 1247. Price \$10.00.

Although revised and considerably enlarged, the present edition of this standard textbook continues to be written for the student of physiology rather than for the clinician. To save space, the author sets out to refer only "to such clinical matters as are of general interest to the subject, and some of the specific instances in which, as has often happened, physiological inspiration has come from clinical material." There is thus practically no mention of the pathological physiology concerned in diseases of the cardiovascular, respiratory or renal systems although lesions of the central nervous system are treated at some length in a section which has been entirely rewritten. Considerable new material has also been added to achieve unusually complete discussions on reproduction and carbohydrate metabolism.

It is surprising that in the revision of the section on special senses, Dr. Hartridge failed to add the use of pseudo-isochromatic charts for the testing for color blindness to the list of available methods.

The work of Rowntree and collaborators on the thymus is still emphasized although it has failed of substantiation by several groups of workers. On the other hand, it would seem that considerable more emphasis and space might have been given to a consideration of the effects of low oxygen tension and high altitude as related to the problems of aviation.

H. B. MAYERSON, Ph. D.

Synopsis of Ano-Rectal Diseases: By Louis V. Hirschman, M. D., F. A. C. S. St. Louis, C. V. Mosby Co., 1942. Pp. 315, Illus. pl. Price \$4.50.

The condensed three hundred and fifteen pages include seventeen rather complete chapters on different aspects of ano-rectal disease, ample illustration and twelve excellent color plates.

The chapter on anatomy is found to be remarkably detailed, including the essential characteristics of the sigmoid. An excellent section is titled "Symptoms which call attention to the rectum;" herein is listed a surprisingly large group of complaints which possibly convict the rectum. Rightly he calls for more emphasis on proper endoscopic investigation of rectal bleeding. Adequate equipment is described and lauded and properly so, especially with relation to the virtues of the Hanes and Buie tables. A suction apparatus is an unmentioned essential.

In discussing anesthesia, the author has covered all but the intravenous barbiturates; perhaps purposely he avoids their use, but in many instances they are ideal for examination in the usual instances and for minor surgical procedures.

A most difficult entity, pruritus ani, occupies much space but little that is new is offered. The roentgen therapist will be disappointed at the neglect of this means of correction. The minor and major surgical procedures concerned with fissure, abscess, fistula and sinus, hemorrhoid and polyposis are instructively and thoroughly described. Such difficulties as impaction, prolapse and foreign bodies are interesting and sufficiently dwelt upon.

Unquestionably this is an excellent synopsis which accomplishes its purpose in covering the field and emphasizing the entities of importance. It is, however, regrettable that lymphopathia venereum, gonorrhea, sexual perversion, rectalgias of neuropsychiatric origin and rectal incontinence are not included to complete the thoroughness of the work and leave it without justifiable criticism.

GORDON MCHARDY, M. D.

Cabot and Adams' Physical Diagnosis: 13th ed. by F. Dennette Adams, M. D. Baltimore, The Williams and Wilkins Company, 1942. Pp. 888 with 398 illustrations. Price \$5.00.

When Richard C. Cabot presented his famous "Physical Diagnosis" in 1900, it was written in the

preface that "this book endeavors to present an account of the diagnostic methods and processes needed by competent practitioners of the present date." In this thirteenth edition, edited by Dr. F. Dennette Adams and a group of distinguished colleagues, exactly that has been accomplished.

It is not necessary to review this work in great detail. Thousands of practicing physicians studied earlier editions of Cabot's great work, and the thousands of medical students in clinical classes today may obtain just as much value from using this one. Above all, it is practical, logical and informative. The student learns not only how to perform a given maneuver, but, what is much more important, how much essential information it will give him about his patient. The student is cautioned against the error of basing his diagnosis on any one single finding and urged instead to correlate all his data and then to reach a conclusion. Again and again sentences in italics point out the pitfalls to be avoided and the more important bits of evidence to be obtained. Of especial interest is the frequent admonition that a patient may be sick without appearing so, and that even when physical signs are meager, there may be significant disease. Above all, the false barriers between clinical and laboratory diagnosis have been eliminated.

The familiar grouping of subjects has been maintained but modified. In some places, one searches for well-known physical signs which formerly occupied places of prominence only to learn that much more information is to be obtained from the newer (usually the chemical or the instrumental) approaches. In other places, much more attention is devoted to methods of examination which had not yet been devised when the earlier editions were written. Unquestionably, the book has "grown" with advances in diagnosis, while yet keeping its physical size within reasonable bounds.

Textbooks on physical diagnosis can never satisfy a majority of teachers because there is wide difference of opinion concerning what should be taught under the classification of physical diagnosis. Despite this objection, it is safe to state that any medical student could profit much from studying this book, and any teacher of the subject could well use it as a basis for his instruction.

SYDNEY JACOBS, M. D.

War Medicine, A Symposium: Edited by Winfield Scott Pugh, M. D. New York, Philosophical Library, 1942. Pp. 565. Price \$7.50.

This is a compilation of 57 papers which originally were published in various medical journals throughout this country, in Canada and in Great Britain. These are grouped together under three general headings "Surgery," "Aviation and Naval Medicine" and "General Medicine."

Although the individual articles are somewhat related to each other, there is no continuity of subject. Each is a separate contribution having to do with some phase of the examination or treatment of men in the armed services. As would be expected, the greatest emphasis is on the effects of trauma and the treatment of traumatic injuries. Singularly enough, there was not included any contribution on epidemiology, sanitation or the control of venereal disease—topics of prime importance under the conditions of modern warfare.

This book will undoubtedly be useful to the physician newly called to any one of the armed forces.

SYDNEY JACOBS, M. D.

A Textbook of Fractures and Dislocations: By Kellogg Speed, S. B., M. D., F. A. C. S. 4th ed. rev. Philadelphia, Lea & Fibiger, 1942. Pp. 1106. Price \$12.50.

This is the fourth edition of a longstanding textbook on fractures. It retains its excellence and remains among the best texts, by being brought up to date with numerous revisions. The text clearly defines the different varieties of fractures and didactically indicates the methods with which they may be successfully treated. Illustrations are numerous. They are well chosen and the quality of them is excellent.

One of the few deficiencies noted is the absence of methods of pin fixations of the Roger-Anderson type and the mechanics for distraction pin methods. The former are so popular in modern warfare, that some illustrations of them would not have been wasted space. Unfortunately, internal fixation of the femur is illustrated mostly by failures, and the Whitman method is indicated as still being of decided comparative value. Not to condone inexperience in either method, it is probably true that expert management is just as essential for good results by use of the Whitman method, as it is with internal fixation.

HOWARD MAHORNER, M. D.

Roentgen Treatment of Diseases of the Nervous System: By Cornelius G. Dyke, M. D., F. A. C. R. and Leo M. Davidoff, M. D., F. A. C. S. Philadelphia, Lea & Febiger, 1942. Pp. 198, illus. Price \$3.25.

Before 1925, the literature on roentgen therapy of tumors of the nervous system was confused because of the lack of knowledge of the true pathologic picture of these lesions. However, since that time much information regarding the classification and radiosensitivity of these lesions has been obtained. This fact added to the improvement of x-ray therapy apparatus has contributed to the splendid progress which has occurred in this field.

The authors of this volume are well known for their many excellent contributions to the subject.

Besides a thorough summary of their own extensive experiences in this field, there is also included the reports of the results obtained by many outstanding radiologists interested in roentgen therapy of lesions of the nervous system. A detailed review of the English literature adds considerably to the value of this work.

This book is divided into a smaller first section concerning the effect of radiation on normal nervous tissue and a considerably larger second section dealing with the effect of radiation on pathologic processes affecting the nervous system. It contains all the recent useful information necessary for the accurate and efficient roentgen therapy of lesions of the nervous system.

J. N. ANÉ, M. D.

Advances in Pediatrics: Edited by Adolph G. De Sanctis, M. D. Associate Editors: L. Emmet Holt, M. D., A. Graeme Mitchell, M. D., Robert A. Strong, M. D., Frederick F. Tisdall, M. D. New York, Interscience Publishers, Inc., 1942. Pp. 306. Price \$4.50.

The editors have compiled a collection of the most significant contributions to pediatric literature which have appeared during the past two years. Continuance of this volume as an annual review is proposed.

The book includes ten sections by various authors as follows: Toxoplasmosis, a recently recognized disease of human beings, by Albert B. Sabin; review of virus diseases, by Horace L. Hodes; chemotherapy in diseases of infancy and childhood, by Benjamin W. Carey; electroencephalography, by Major Normal Q. Brill; the role of vitamin K in hemorrhage in the newborn period, by H. G. Poncher; persistent ductus arteriosus and its surgical treatment, by Robert E. Gross; the premature infant, by Abraham Tow; tuberculosis, by Waldo E. Nelson; endocrinology, by Murray B. Gordon; short abstracts of some other advances in pediatrics, by Adolph G. De Sanctis and George E. Pitinos.

The volume will undoubtedly be of greatest value to those who find it impossible to cover the current pediatric literature as it appears. The reviewer feels that in general the various articles could be presented in a much more condensed form, particularly since the original work has been published so recently and is so readily available.

The section on toxoplasmosis by Dr. Albert B. Sabin rightly stands first in the volume as the most lucid and interesting contribution. The very short abstracts on subjects such as cystic fibrosis of the pancreas, influenzal meningitis, and the prophylactic use of sulfanilamide in rheumatic fever seem to deserve more detailed coverage than is accorded them in the final section.

"Advances in Pediatrics" should prove to be of inestimable value to the busy practitioner.

R. V. PLATOU, M. D.

The Electrocardiogram and X-ray Configuration of the Heart: By Arthur M. Master, B. S., M. D., F. A. C. P. Philadelphia, Lea & Febiger, 1942. 2nd ed. Pp. 404, illus. Price \$7.50.

The second edition of this monograph has been extensively revised and amplified to add merit to an already worthwhile volume. The atlas form of presentation has been maintained. Correlation of the electrocardiographic examination with the teleoroentgenogram is shown in exceptionally good reproductions taken from cases in the author's own experience. These correlations add to the medical literature an important work covering all the usual phases of heart disease. Normal variations in the electrocardiogram and teleoroentgenogram are stressed to a much greater extent than is usually done, particularly the effects of age, habitus, body position, and respiration.

This edition, as was the first, is profitable reading for both the physician and student interested in heart disease.

W. A. SODEMAN, M. D.

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THE INCREASING INCIDENCE AND COMPLICATIONS OF CHRONIC BACILLARY DYSENTERY*

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AND

ANDREW V. FRIEDRICHS, M. D.
NEW ORLEANS

A study of acute and chronic bacillary dysentery in the far South has been made, since the preliminary report of one of us (D.N.S.). In the past 16 years that have elapsed since 1926, to the present writing, an estimated 700 cases of bacteriologically proved bacillary dysentery or *B. dysenteriae* infection of the bowel, have been diagnosed and treated. A certain percentage of individuals chronically infected with the bacillus of dysentery have no diarrhea or the classical syndrome of dysentery and these are therefore, hereinafter, designated as *B. dysenteriae* infections. This type of case, which is not unusual but frequently overlooked, was emphasized in a previous communication.

INCIDENCE

In 1932, in the New Orleans area, one of us (D.N.S.) reported an increased incidence of infections with the bacillus of dysentery. Up to this report, in 1932, it was demonstrated the prevalent strain of organism causing bacillary dysentery in Louisiana was the Flexner bacillus. As time went on and many more cases of chronic sporadic bacillary dysentery were studied, it was found the lactose fermenter of Duval was the etiologic factor in the predominant num-

ber of cases. At the present writing, however, with the increased prevalence, virulence and more frequent incidence of complications it is to be noted that strains of the original Shiga bacillus and of the Flexner are more frequently encountered and, as a matter of fact, the lactose fermenter reported ten years ago is now an unusual finding in chronic bacillary dysentery.

Bacillary dysentery has shown a definite tendency to become endemic in many states of the Union since our earlier reports. In their report in Illinois in 1936, L. H. Block and A. Simon credit the writers with the prophecy, in 1926, that "infection of the intestinal tract with the bacillus of dysentery would spread throughout the country as it had in Louisiana and in the far South, if the disease were not properly controlled." To prove that this is correct Block and Simon found, at the Elgin State Hospital of a population of 4,500 individuals, there were 475 cases of bacillary dysentery all of which were Flexner. Since the work of Block and Simon, reports have come from Virginia, Missouri, California, New York and Vermont and others. In Virginia over a three year period, McGinnis, McLean et al. reported 161 cases in east central Virginia. In their instances they found a Flexner organism as the main offender. In a routine examination of 688 well individuals they found 110 infected and acting as carriers. In Missouri, Lapp in 1936, reported 10 cases of dysentery caused by the Shiga organism. In New York, in 1936, Stebbins states there were 27 epidemics of dysentery, of which nine were proved bacillary; in 1937, 48 epidemics and 13 proved to be bacillary; in 1938, 72 epidemics and 24 proved

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

to be bacillary. In the first instance 260 individuals were involved, in the second, 324, and in the third, 1200.

In 1934, Reed reported the infection as being widespread throughout the state of California. In 1940, Quinlivan in New York State, reported an infection of bacillary dysentery at a boys' camp wherein there were 340 campers, 105 infected. Miller also reported an outbreak of dysentery of the Hiss type in this state. In 1940, Block and Ferguson reported an outbreak of Shiga dysentery in Michigan. In 1941, in Vermont, Thorne reported an epidemic at the Brandon State School and in this instance the Flexner was the offending organism.

COMPLICATIONS

First of all, Felsen speaks of the insidious nature of bacillary dysentery. He states that next to syphilis, bacillary dysentery is perhaps the greatest disease mimic of all times. He feels that probably the most logical concept of bacillary dysentery is one that regards it as a focal intestinal manifestation of a systemic infection with toxic absorption. It was originally shown by us that many of the manifestations such as arthritis, myocarditis, vascular dysfunction, and even obstructing colon spasm, are frequent manifestations of protein hypersensitivity to the bacillus of dysentery infecting the patient. The favorable results of treatment have accrued from measures directed towards the desensitization of these patients. Other complications which are of an organic nature rather than of functional origin, result directly from the pathology originally established in the bowel. We particularly wish to call attention to the possibility of perforation occurring more frequently than expected or even anticipated, in any case of chronic bacillary dysentery, no matter how mild the intestinal symptoms may be. In fact an individual with *B. dysenteriae* infection of the bowel in a period of remission, following treatment, or without treatment, is always a potential victim of this most serious complication.

The complications are many and occur

very frequently. Some of the complications are very serious and may occur when least expected as in some cases with comparatively mild symptoms. Perhaps the most disastrous condition developing incident to bacillary dysentery is perforation of the colon. This finding is definitely in contrast to the earlier teachings of this disease when it was thought the infection, from the pathologic point of view, involved only the superficial mucous membrane of the bowel. The deeper penetration of the bowel, as observed in our series of cases, may be localized but in some instances a large segment of the bowel may be so involved in an ulcerative and gangrenous process that this entire section of the colon sloughs completely. Such a possibility in any case of bacillary dysentery warrants a serious consideration of every case of the disease. In 1939, several cases of perforation complicating bacillary dysentery were reported by one of us at the meeting of the American Gastroenterological Association. In two of these individuals there was an absence of intestinal symptoms just prior to the perforation. The following case is a striking example of this rather common occurrence.

CASE NO. 1

W. D. P., aged 57, had complained for a period of eight weeks of slight generalized pain and occasional frequency of stools. On March 1, he was seen in the morning after having had a severe attack of intestinal colic two days before. He had an appendectomy many years before. The physical examination of the abdomen was negative and the temperature was normal. At this time a proctoscopic examination showed a diffusely inflamed mucous membrane of the rectum and sigmoid. Scrapings of the mucous membrane were taken for culture. On the evening of this day of March 1, intense pain developed, the temperature rising to 101° F. At this time there was a definite change developing. The right side of the abdomen, especially the muscles of the right lower quadrant, was rigid on palpation. There was a distinct mass over the cecum about the size of a small orange. Suspecting perforation of the cecum, as previously observed but not immediately recognized in other cases of bacillary dysentery, the patient was hospitalized at once. The treatment consisted of absolute rest in bed and only water and readily absorbed non-residue liquids by mouth. Within five days of his initial examination, the cultures defi-

nitely contained the bacillus of dysentery, Shiga strain. We were, therefore, convinced a sudden and localized perforation of a dysentery ulcer had taken place in the cecum.

Chronic *B. dysenteriae* infection of the bowel may exacerbate to such an extent that the disease may mimic the acute surgical abdomen. This does occur in some individuals infected with the dysentery bacillus, but who never had any of the intestinal symptoms of dysentery, before the onset of the acute abdominal symptoms (Bond). In fact, the prodromal symptoms were of a gastric nature, especially epigastric pain, nausea and vomiting, or symptoms of an upper abdominal entity. It should, therefore, be emphasized that a patient suffering with *B. dysenteriae* infection may not ever give a history of having had a diarrhea, or any acute intestinal symptoms.

The common acute abdominal diseases simulated by *B. dysenteriae* infection are acute cholecystitis, pancreatitis, hepatitis with an accompanying jaundice, and, of course, one may readily surmise that many an appendix is removed because of the believed acute nature of the organ when, in reality, the chronic bacillary dysentery infection is the offender lurking in the background.

Aside from these commoner sites we know of one particular instance wherein it was believed that the patient was suffering from a chronic intestinal obstruction and, in reality, the x-ray examinations did show such a phenomenon (Case No. 4). In this individual there was a history of intestinal pain and diarrhea at intervals for many years. There was a definite change in the symptomatology in the past year when there was noted a gradually increasing chronic constipation, so much so that no bowel elimination took place over a period of seven days even with the use of laxatives. There was found a marked narrowing of the transverse colon for a distance of approximately two and one-half inches near the splenic flexure. This narrowing proved purely functional in nature, an enterospasm due to an allergic reaction of the intestine.

CASE NO. 2

H. V., a white man, 46 years old, was first seen

in April, 1937. At that time he complained of severe pain in the abdomen. He had frequent bloody stools during the previous ten days. At times the abdominal pain was severe and generalized. He was very weak and somewhat delirious. The examination demonstrated the abdomen to be generally distended and very tender. The blood count showed 4,300,000 red blood cells, 85 per cent hemoglobin, and 14,000 white cells. The proctoscopic examination revealed a diffuse inflammation and marked edema of the entire rectum and sigmoid. The stool culture had previously shown positive for bacillus of dysentery, Duval strain. A definite mass could be palpated in the right iliac fossa. The temperature was 103°. On April 20, the temperature rose to 106.4° (rectal). The blood count showed red blood cells 4,400,000, hemoglobin 85 per cent and white blood cells 22,000. Acute perforation of the cecum complicating bacillary dysentery was suspected. Following an infusion of 1000 c. c. of 5 per cent glucose and normal saline, the patient developed chills with a drop of blood pressure from 160/85 to 80/40. An acute dilatation of the heart complicated the picture. The localized peritonitis with mass formation complicating the chronic bacillary dysentery subsided in a period of two weeks. Of immeasurable diagnostic value is the subsequent development in this case. After a lapse of three and a half years, at the age of 50, this man developed an acute appendicitis. Within eight hours of the acute symptoms, the appendix was removed. Above and away from the base of the appendix there was noted a mass of pericecal adhesions at the site of the perforated cecum which complicated the bacillary dysentery, three and a half years previously.

CASE NO. 3

A. B., aged 59, had been ill for several months. When first seen there had been nausea and vomiting for one week. There had been no history of diarrhea. The examination revealed an acute upper abdominal syndrome, there being marked rigidity of the upper abdomen, especially the upper right rectus and tenderness on pressure. The urine contained urobilinogen, and the icterus index was elevated to 24. The temperature was 104.6° (rectal), with a leukocytosis of 12,250. An acute cholecystitis was diagnosed and operation recommended. Although the gallbladder was normal, a cholecystostomy was performed. Three days following the operation there was an onset of intestinal symptoms with blood and mucous diarrhea. The stool cultures showed bacillus of dysentery, Shiga strain.

DISCUSSION

The above case is a striking example of the occurrence of chronic *B. dysenteriae* infection of the bowel without manifestation of classical bowel symptoms, such as intestinal pain, diarrhea, blood and mucus in the stool for a long period of time. In such in-

stances, as reiterated above, the patients may go undiagnosed and subsequently develop serious symptoms or complications not suspected as being a part of a dysenteric infection. Pneumonia developed in the course of the severe dysenteric infection. The patient subsequently died of meningococcal meningitis.

Such other complications of a functional nature and, therefore, not serious as is perforation, are intense localized obstructing colonic spasm, causing persistent and severe pain in the area of spasm. This abnormal muscular contraction is now believed to be a phenomenon of vasomotor reaction to the infecting bacillus of dysentery, synonymous with bacterial allergy. A striking example of this functional disturbance in the bowel is the following case.

CASE NO. 4

A female, aged 57, had a long history of abdominal pain and periodic attacks of diarrhea. In the past year the intestinal motility had changed to a constipation of increasing degree. In fact, when seen on January 8, 1942, the bowels would not move after strong laxatives and enemata. The barium meal showed an area of spasm of several inches in the transverse colon proximal to the splenic flexure. This contraction of the bowel wall prevented the barium from going through that segment for four days and allowed only a small part of the barium to traverse it after 120 hours. A study of the cultures of scrapings from the sigmoidal mucous membrane gave colonies of *B. dysenteriae*, Shiga strain. After the administration of atropine, hypodermatically, the barium enema revealed relaxation of the previously observed bowel wall spasm. This latter condition has been overcome by the method used by us in the desensitization of cases of *B. dysenteriae* infection which show such allergic phenomenon as this case illustrates.

In the following case there is another illustration of intense localized intestinal spasm causing severe pain, but no obstruction since the contraction of the bowel was not completely annular.

CASE NO. 5

Mrs. I. L. had a history of severe left lower abdominal pain but regular evacuation of the bowel without history of diarrhea or blood in the stool. The cultures from direct scrapings of the rectal and sigmoidal mucous membrane gave positive *B. dysenteriae*, Flexner strain. The first barium enema examination demonstrated a definite localized filling defect in the lower descending colon.

After atropine injections, a second barium enema showed relaxation of the spasm which previously gave the radiologic picture of a filling defect. The normal contour of the bowel and complete relief of intestinal pain has been obtained, as in the previous case, by neutralization with graduated dilutions of autogenous vaccine.

DISCUSSION

These two cases prove to be illustrative of an allergic reaction to the organism infecting the intestinal tract, namely the bacillus of dysentery. These cases demonstrate the necessity for a more careful study of an apparent serious intestinal lesion. In these patients, on the first clinical and x-ray observations, we suspected a filling defect as seen in malignant or benign tumors causing partial or almost complete constriction. On bacterial survey it was found these patients were infected with one or other strain of the bacillus of dysentery. Remembering the rather frequent occurrence of neuromuscular reactions in the intestine to these infecting bacilli of dysentery, further radiologic studies were made, after antispasmodics, and the previously demonstrated filling defect proved to be functional in type. Proof of this allergic phenomenon was the complete relief of the signs and symptoms following desensitization of the patient with vaccine therapy.

SUMMARY AND CONCLUSIONS

Since our preliminary report, in 1926, on the not unusual occurrence of chronic bacillary dysentery in this part of the country, we have shown the endemic nature and the constantly increasing prevalence of sporadic bacillary dysentery in and around New Orleans. In a subsequent study of this disease in our section of the country in 1932, we predicted the spread of bacillary dysentery and its increasing incidence in other sections of the United States. This prophecy has been borne out by the reports of cases emanating from many of the other states, including New York, New Jersey, Illinois, California, Vermont, Missouri and Virginia. At this time we wish to emphasize the continued increase in the number of cases of sporadic bacillary dysentery. The strain of the bacillus of dysentery has varied in our cases and the prevalent organism

has been one of the strains, namely the Duval bacillus at one time, the Flexner strain at still another, and, at present, we are encountering more cases, than ever before, due to the Shiga strain. It is to be noted in our experience, the present cases show a more virulent type of infection than in the previous years.

We believe that this increase in incidence and virulence of bacillary dysentery in this and other sections of the country is very pertinent to the aggregation of great numbers of men in the different camps and the various communities. We believe that the possibility of this infection spreading from a local community to one of these camps is very great, and certainly a very close vigilance should be observed and should a case of dysentery be found, this individual should be isolated and every effort be made to prevent the spread of this very serious disease.

DISCUSSION

Dr. Allan Eustis (New Orleans): I recall when Dr. Silverman first brought out the prevalence and danger of bacillary dysentery. The majority of the profession did not take it seriously. But I am glad that his original prediction, although sorry for the people, has been vindicated.

I cannot add anything to what Dr. Silverman has so fully gone into, nor am I in a position to do so. I would like to consider certain points he mentioned in his paper and probably dilate on certain features he did not have time to take up.

First, all those of you in the general profession, I cannot too thoroughly impress upon you the absence of diarrhea in many of these cases which I have referred to Dr. Silverman and which he has treated successfully. They may have vague pain and go on for years undiagnosed, unless you have a culture made, and it requires a certain amount of knowledge to do that.

Now, where is the source of this infection? I have only recently recovered from an attack of amebiasis, under Dr. Silverman's treatment, and the only possible source that I could consider for this amebiasis was in lettuce. I have always been a big lettuce eater. Dr. Faust called our attention many years ago to the danger of eating lettuce. Most of it is grown by Orientals who fertilize the vegetables with human excreta. Most of our lettuce comes from California where the farming is done by Japanese. Now, Dr. Silverman has not allowed his patients to eat lettuce for many years.

The complications he brought out are most interesting to those in general practice, and I agree

that a great many of these patients may be wrongly operated upon for an acute surgical abdomen.

There were a few points that he did not have time to bring out, and one is the frequency of regional ileitis that we hear so much of now. It is only in the last five or six years that cases are being reported. Is it due to the fact that there is more widespread infection of the bowel with *B. dysenteriae*? There is no reason why the organisms should not affect the ileum as well as the colon.

Dr. Silverman did not say anything about the treatment, but I think those of you in the rural districts may be interested. Dr. Silverman's treatment consists of making an autogenous vaccine, with the aid of Dr. Friedrichs, and he desensitizes the patients with small doses in increasing amounts of vaccine. I recall one case of a former teacher, whom I treated for recurrent attacks of diarrhea fifteen to twenty years. Finally, Dr. Silverman found the Shiga organism and desensitized him with complete cure of the gastrointestinal symptoms. Finally, he died of cardiac disease at 80 years of age.

It is well to consider the diet in these cases. Dr. Silverman did not mention it, but his printed paper says to put the patients on a soluble diet. I believe that is very important, while treating these patients. I do not mean to keep them continually on a soluble diet, but in the acute stage put them on a non-residue diet. In addition to this, all of these organisms are proteolytic organisms, live on proteins and will give the highest indican reaction in the urine. So that also a low protein diet is indicated.

It is not necessary for me to mention the necessity of giving atropine or belladonna to relieve spasm, but I think the most important thing is to make a thorough examination before operation is resorted to.

Dr. C. C. de Gravelles (New Iberia): I think that few of us in the rural districts really appreciate the seriousness of this condition as we have it. I think few of us go to the trouble of completing the diagnosis on these things. I will plead guilty, as many of my confrères will, to having treated these patients off and on without ever trying to get to the root and see what the etiologic factor was. This is becoming too widespread throughout the State, and it behooves each and every one in the rural districts when we see these cases to have the stools examined. With the present set-up all over the State today, this can easily be done. A few years ago, it was rather difficult. We had to collect these specimens and send them in to some center. But with the health units throughout the State, they will take care of this.

Recently, in my section of the country, we had quite an outbreak. A friend of mine had 75 pounds of sausage sent in from another state, and he apportioned it out among his friends. Twenty-four hours later, we had 12 cases of bacillary dysentery,

some very serious. I happened to have one of the cases, and promptly had the health unit make an examination and they found it was the Shiga infection, and I understand the other cases were Shiga infection. So this thing is widespread. It is serious and it is up to us especially in the rural districts to follow the case through when we get a case of either of the dysenteries, and make the proper diagnosis, and not simply give the patients a little bismuth. Let us try to follow these cases through and see, if possible, if we cannot eradicate this serious condition threatening the State today.

Dr. E. W. Kroll (San Francisco, California): I am a stranger in your midst and have been enjoying your Convention but have arisen to defend what was said here about our California lettuce plantations being fertilized by human excreta. I simply cannot let that pass. As you probably know, our lettuce is, or rather has been largely grown by the Japanese. However, that is all stopped now as the Japanese are being interned. As far as fertilization by human excreta is concerned, I can assure you that you can come to California and eat all the lettuce you want with impunity as our State Board of Health rigidly supervises all of this sort of thing and our Health Laws protect the consumer.

It is true that we do have some amebic dysentery there from time to time, as probably every state in the Union has. San Francisco, being a gateway to the Orient, undoubtedly has many of these cases slip through that way. However, the incidence of amebiasis is very low. Had I realized that this paper was going to be given I would have looked up the statistics, but I know that it is low because I have practiced in San Francisco for 30 years and there never has been any epidemic of amebiasis in all that time.

Dr. Morris Shushan (New Orleans): Dr. Silverman has certainly been a pioneer in the field of bacillary dysentery, and it is due largely to his efforts in this community that we are conscious of and looking for this infection.

He has not had time today to stress the methods of diagnosis which are employed, especially in the chronic cases. Acute epidemics that Dr. de Gravelles mentioned are relatively easy to recognize provided that stool cultures are made. In the chronic case, the diagnosis is often a bit more difficult. The agglutination tests for bacillary dysentery are not standardized sufficiently at the present time. There is a great deal of difference in the way the tests are performed by the various laboratories. For example, in one local institution, about six or seven strains of Flexner are used in performing the agglutination test, while other laboratories will use one strain, and if that is negative the test is negative for bacillary dysentery. In addition, there is still no uniformity between the various laboratories as to whether the tests should be performed by macroscopic or microscopic technic.

Another point that I have noticed in trying to check the results from various places, is the fact that the prozone phenomenon enters into the test. It has been shown in some cases that if you have a negative titer in low dilutions, the test may be negative, but if the blood is diluted up a positive report is obtained. Certain laboratories will only run a 1:40 dilution and state the blood is negative for bacillary dysentery. So far as the agglutination test is concerned, I think further emphasis should be adopted, and also, more than one strain, especially of the Flexner type, should be used in performing the test.

Some years ago I began to skin test every patient in whom I suspected chronic bacillary dysentery, and frequently the results in a tuberculin type of reaction run roughly comparable with the agglutination test, so that I now perform the skin tests along with the agglutination test in looking for these chronic cases.

One other point deserves mention. Dr. Silverman has done much work in the question of stool cultures. One hundred per cent of these chronic cases do not give positive stool cultures. Probably we should repeat the cultures more frequently than we do. I would like to ask Dr. Silverman roughly in what percentage he finds positive culture in chronic cases.

Dr. William H. Harris (New Orleans): I cannot refrain from discussing the praiseworthy work of Dr. Silverman in this field. Naturally, from the title of his paper, "The Increasing Incidence and Complications of Chronic Bacillary Dysentery," we could not have expected him to go into all allied factors. It so happened that it was my good fortune to observe years back the inauguration of Dr. Silverman's work. It came about in this way: He was confronted with a great many cases in which the etiologic factor could not be established, particularly in regard to a suggestive amebic type. He knew that search for other causal agents was necessary. We, in the Department of Bacteriology at Tulane had been asked by Dr. Simon Flexner of the Rockefeller Institute to make an investigation of the prevalence of bacillary dysentery in the area. We were so interested in other problems that we failed to undertake this study. It was Dr. Silverman's realization that something had to be done that really precipitated this kind of investigation. His splendid work and publications in this field, as well as upon other experimental observations, brought recognition and credit to our community.

Dr. Silverman has stressed the fact that the bowel lesion is not always of a superficial character. My realization of this fact was obtained from a monograph of such studies made in the tropics some years ago, in which the lesions of the bowel in virulent and neglected cases of bacillary dysentery were described. The illustrations were most striking. I did not realize that bacillary dysentery could produce such extensive and deeply ulcerated

lesions in the bowel. Dr. Silverman has emphasized such occurrences in his own experience where, in even perforation has eventuated.

I think that there have been efforts made to control the spread and check the ravages, but notwithstanding, the disease has gained headway and has revealed augmented virulence.

In conclusion, there is only one point which I might add, that is, we must be conscious of the possibility of two etiologic agents. I recall years ago Dr. Maurice Couret, during studies upon the cultivation of ameba, observed in quite a few instances of amebic dysentery that did not get well after proper treatments that *B. dysenteriae* was also present. The occasional concomitant occurrence of bacillary and amebic dysentery must be realized. In Chicago during that fearful scourge there were observed both separate, that is, amebic or bacillary forms, as well as mixed types.

I feel that Dr. Silverman many years ago placed in the laps of those of us doing bacteriology and pathology, this problem, which should have originated with us. He deserves every praise and commendation not only for his scientific achievements but for the practical benefits by those who are unfortunately afflicted with this fearful disease.

It seems quite evident that—"reversing the peristalsis"—"I came to praise Caesar and not to bury him."

Dr. Andrew V. Friedrichs (New Orleans): Both Dr. Harris and I were instrumental in having carried out a great deal of this work with Dr. Silverman. I will discuss only the bacteriologic side. It is not included in the title of the paper but I think it is pertinent and should be of interest.

We have found that, primarily, one stool examination is not sufficient to rule out the disease, provided, of course, the plating is negative. Two or three surveys are made on each patient. When Dr. Silverman has a patient wherein he suspects dysentery, and, as he brought out in his paper, practically every patient he sees has some indefinite bowel disturbance, a bacteriologic survey of that stool is made. The material for plating is prepared, a proctoscopic examination done, and within less than five minutes after the material has been removed from the bowel, it is plated. The important factor is that we know that the colon bacillus is present in every individual bowel and, if left alone, will outgrow any pathogenic organism which may be present. This time factor is of extreme importance.

In these low grade chronic cases, we may find only one colony of true dysentery present. There will be hundreds of colon bacilli and, of course, isolating that one colony is sufficient. The agglutination tests are carried out, as the doctor suggested, in varying dilutions, but we have found that the agglutination tests do not coincide with the bacteriologic findings. In many instances, we obtain a negative agglutination test with the stock

culture and with the bacteriologic survey, we will isolate one of the group of dysentery organisms. We must remember that the agglutination tests are due to the presence of antibodies in the individual's blood stream. If an individual's resistance is low, there are few antibodies present, the disease is able to carry on and in this instance, we obtain negative agglutination tests. We cannot rule out the disease on agglutinations alone. I can readily appreciate that you men in the country, as Dr. de Gravelles brought out, do not have the facilities for this work and that the patient should be sent to the bacteriologist and specimens should be obtained with the proctoscope.

VITAMIN DEFICIENCY STATES IN LOUISIANA*

ROBERT C. LOWE, M. D.†
NEW ORLEANS

Continued studies in the field of nutritional diseases, particularly those due to inadequate vitamin intake or utilization, have demonstrated that varying degrees of deficiency occur, ranging from sub-clinical unsaturation, to clinically recognizable specific deficiency disease, to death. The complete study of a given vitamin deficiency therefore requires data on laboratory studies for the recognition of the incidence of subclinical unsaturation, morbidity studies to determine the incidence of clinical diseases, and mortality studies. All this material is as yet not available. Some of it has been accumulating for many years, but some is just beginning to emerge. The importance of mortality studies is limited but serves to allocate a disease geographically and with reference to the killing power of other diseases. Only a general idea of the frequency of a disease can be obtained from its mortality rate.

Pellagra has the greatest killing power of all the vitamin deficiency diseases. Louisiana is included in the southeastern group of states known as the "Pellagra States" (table 1). It is relatively low in the mor-

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

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TABLE 1
MORTALITY RATES FOR PELLAGRA—1940
Colored

Total		Colored		White	
State	Rate	State	Rate	State	Rate
1. Alabama	8.7	1. Alabama	12.8	1. Georgia	7.0
2. Georgia	8.4	2. Georgia	11.3	2. Alabama	6.6
3. S. Carolina	8.0'	3. Mississippi	11.2	3. N. Carolina	5.1
4. Mississippi	7.8	4. Arkansas	11.0	4. S. Carolina	5.4'
5. Arkansas	5.4	5. S. Carolina	11.2'	5. Mississippi	4.5
6. Tennessee	5.3'	6. Florida	8.0	6. Tennessee	4.9'
7. N. Carolina	4.9	7. LOUISIANA	6.9	7. Arkansas	3.5
8. Florida	4.1	8. Tennessee	7.3'	8. Florida	2.5
9. LOUISIANA	3.2	9. Oklahoma	4.6	9. Oklahoma	2.3
10. Oklahoma	2.5	10. N. Carolina	4.1	10. Kentucky	2.2
11. Kentucky	2.1	11. Virginia	2.6'	11. Virginia	2.3'
12. Virginia	2.4'	12. Kentucky	1.4	12. LOUISIANA	1.1

' 1939 rate, 1940 rates not available.

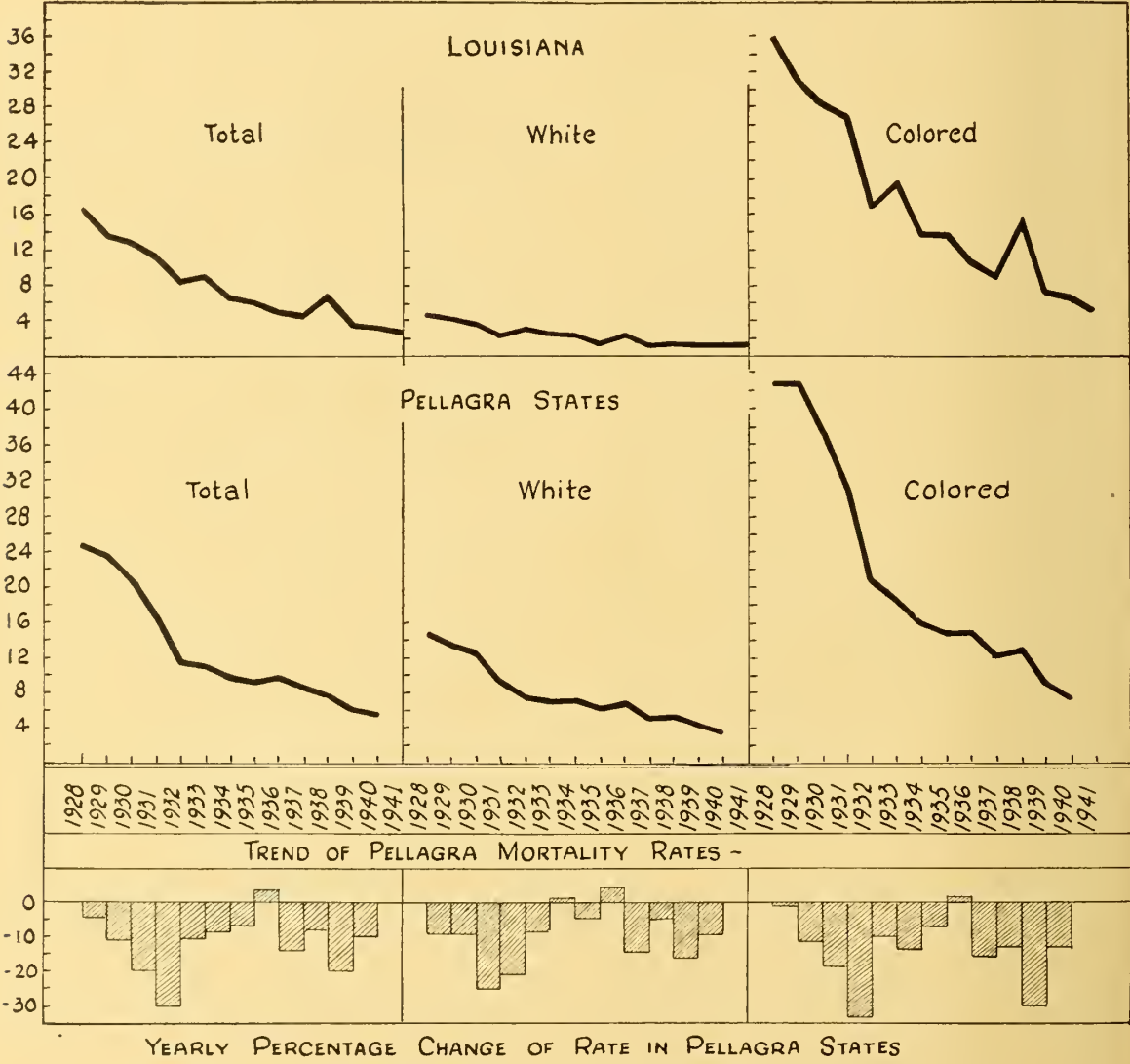


Fig. 1

tality list and has maintained this same position from year to year. A study of the average pellagra mortality¹ for this group of states shows that up to 1928 the death rate was progressively climbing. However, between 1927 and 1930 the rate for each state had reached its peak. From this time up to 1932 there was a fairly rapid decrease (fig. 1), with a pause in 1932 and 1933, followed by a further gradual decline. The same trend of the rate for pellagra occurred in Louisiana, decreasing from 17.7 per 100,000 population in 1927 to 2.6 in 1941, or over 85 per cent. The absolute decrease was greater in the case of the colored population, from 41 to 5.4, than for white, from 4.7 to 1.1. The relative decline was similar for both white and colored groups; however the changes occurred from one to two years later in the colored.

Such a complete reversal of trend as occurred in the mortality rate in pellagra in 1928 must have been due to some crucial change in one or several factors. It is doubtful whether either economic or social conditions affecting this group changed sufficiently at that time to explain it. However, in 1924 Goldberger^{2a-b} and his co-workers began the publication of a series of papers on the dietary value of fresh meat, milk and yeast in the treatment and prevention of pellagra. In 1930 he and Sebrell^{2c} published their observations on the value of Minot's liver extract in treating black tongue in dogs; and by 1933 its use in human pellagra was extensive and the results fully attested in the literature.

A discovery fully as important was announced by Elvehjem³ and others in 1937,

on the role of nicotinic acid in the therapy of pellagra, so it would appear that we might expect a much further reduction of the mortality rate from this disease. However, it is obvious that up to 1940 or 1941 (fig. 1) there is only a suggestion that such a change might occur.

There are several things to consider in explaining these changes or lack of expected changes. In the first place, and probably most significant, is the fact that as long as a large reservoir of the disease exists the effects of even specific therapeutic measures on mortality rates will be limited. Secondly, pellagra has the inherent tendency to become chronic or recurrent as long as the nutritional background upon which it develops is not improved. For instance, 21.5 per cent of our cases gave a history of chronic or recurrent evidence of the disease over a period of four months to seven years. These two features of pellagra, the continual addition of new cases and the chronicity or recurrence of a large percentage of the old ones, emphasize the importance of instituting preventive measures. A third factor which undoubtedly has delayed the decrease in mortality is the generally recognized lag between the introduction of a therapeutic agent and the spread of its application. Eighteen per cent of the deaths from this disease were reported from the general hospitals of the state in 1940. This might mean that only 18 per cent of all pellagrins are seen and treated in hospitals. However, a consideration of the death rates for two of them over the past five years (table 2) shows what might be expected from the introduction of such a specific

TABLE 2
PELLAGRA ADMISSIONS AND PER CENT OF DEATHS
CHARITY HOSPITALS OF SHREVEPORT AND NEW ORLEANS
1937 THROUGH 1941

	— 1937 —		— 1938 —		— 1939 —		— 1940 —		— 1941 —	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Shreveport	44	11 (25%)	86	12 (14%)	82	9 (11%)	27	2 (7.4%)	23	0
New Orleans....	28	6 (21%)	19	9 (47%)	70	9 (13%)	36	2 (5.5%)	35	3 (8.6%)
Total	72	17 (23%)	105	21 (20%)	152	18 (12%)	63	4 (6.3%)	58	3 (5.2%)

Pellagra Mortality Rate per 100,000 Population in Louisiana
Bureau of Census Vital Statistics

1937	1938	1939	1940
4.4	6.5	3.4	3.2

Percentage change between 1937 and 1940 rates—minus 27.3%

agent as nicotinic acid. The figures from Shreveport Charity Hospital, generously supplied by Dr. Edgar Galloway,⁴ report 262 cases of pellagra (2.2 per 1000 admissions) and a decline in the number of deaths from 25 per cent in 1937 to zero in 1941. Our own figures at the Charity Hos-

diagnoses of pellagra without dermatitis and with or without psychosis noted since its use, from an average of 17.6 per cent of all pellagra cases in 1937 and 1938 to 25 per cent in 1939, 1940 and 1941.

A study of these cases brings out another significant fact (table 3), that the occur-

TABLE 3
MONTHLY INCIDENCE OF PELLAGRA WITH AND WITHOUT DERMATITIS
CHARITY HOSPITAL OF NEW ORLEANS, 1937-1941

		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
	1937.....	1	1	0	2	0	4	2	2	2	4	5	2
Pellagra	1938.....	1	2	1	0	1	0	2	1	2	3	1	0
with	1939.....	3	2	3	3	6	2	7	8	9	3	2	4
dermatitis	1940.....	3	0	2	3	6	0	1	1	4	1	1	3
	1941.....	1	2	0	2	3	1	1	3	5	1	5	2
	Total ..	9	7	6	10	16	7	13	15	22	12	14	11

68
9.7/month

74
15/month

ratio 2:3

		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
	1937.....	1	0	0	0	1	0	1	0	1	0	0	0
Pellagra	1938.....	0	1	2	0	1	0	0	0	0	0	0	0
sine	1939.....	1	4	0	4	2	2	1	2	2	0	0	0
pellagra	1940.....	1	1	1	1	1	0	2	0	1	0	2	1
	1941.....	1	1	0	0	0	1	1	0	0	2	0	1
	Total ..	4	7	3	5	5	3	5	2	4	2	2	2

32
4.6/month

12
2.4/month

ratio 2:1

pital of New Orleans are little less dramatic. There were 188 cases admitted (.63 per 1000) and there was a decrease in the number of deaths from 21.4 per cent in 1937 and 47.4 per cent in 1938 to 5.5 per cent in 1940 and 8.6 per cent in 1941. The averages for the two hospitals from 1937 to 1940 show a change of from 23.6 to 6.3 per cent, a decrease of over 73 per cent. The rate for the state as a whole, calculated from the Bureau of Census figures, decreased only 27.3 per cent, which is less than the decrease of 33.7 per cent for the previous four year period 1934-1937.

There is no longer any doubt of the value of nicotinic acid in the treatment of pellagra, and one should not hesitate to use it in full therapeutic doses, orally, intramuscularly or intravenously as required. Its value as a therapeutic test in doubtful cases is indicated by the increasing number of

rence per month of pellagra with dermatitis, acute or chronic, in the full summer months of May, June, July, August and September is related as three to two for the months of the rest of the year. On the other hand, pellagra without dermatitis occurred twice as frequently in the winter months as in the summer. It is obvious that one must be on guard especially in the fall, winter and spring for pellagra without dermatitis.

The geographic distribution of pellagra deaths in Louisiana is of interest. It can be illustrated by allocating the deaths by place of residence and calculating the rates of each parish (fig. 2). This has been done with figures supplied by the Louisiana State Board of Health. The 129 deaths attributed to pellagra in 1940 and 1941 occurred in 42 of the 64 parishes. There are two foci, one throughout the northern par-

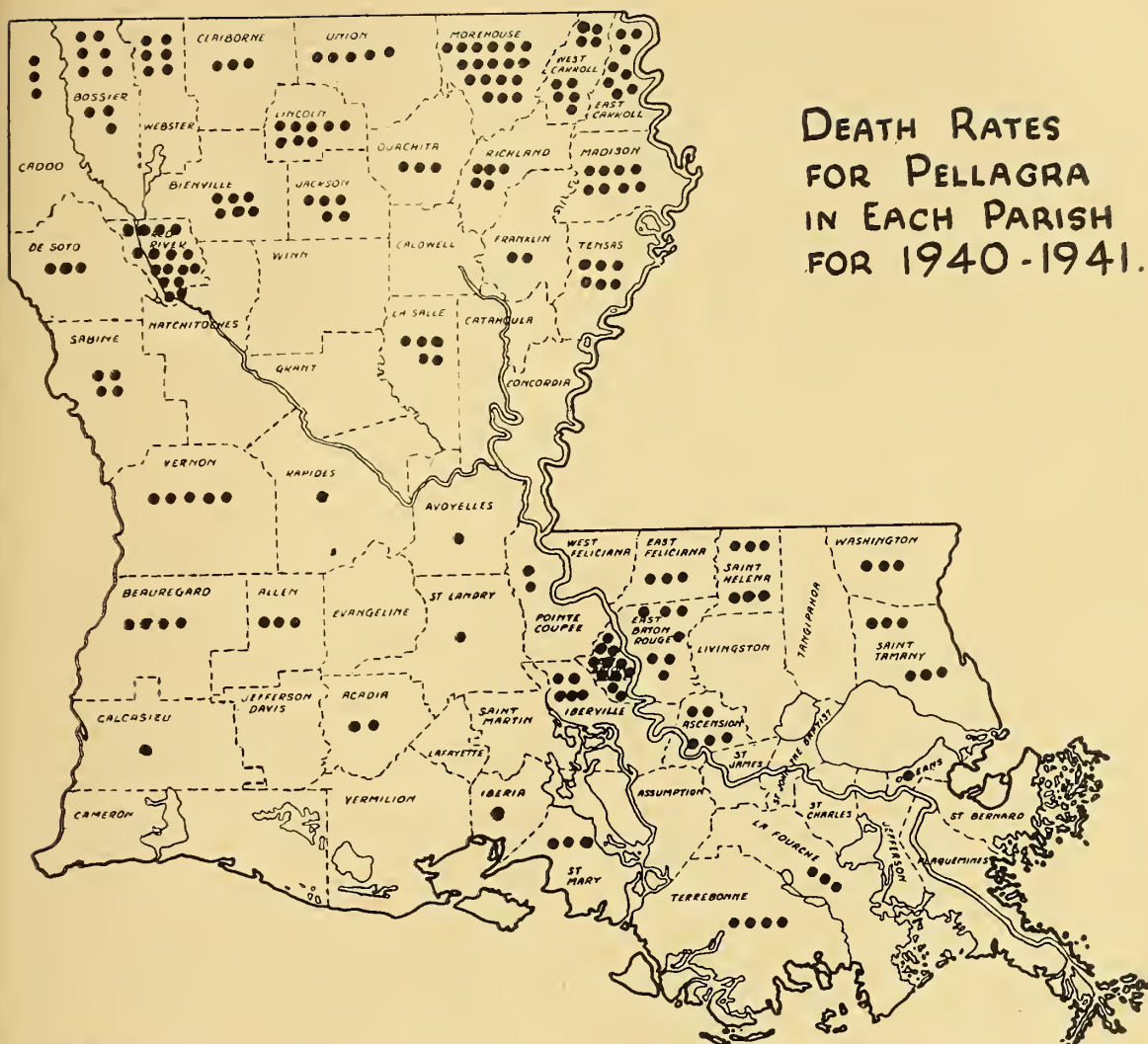


Fig. 2

ishes, and the second in the southeastern section extending from East and West Baton Rouge Parishes eastward. Presumably this distribution of the mortality of pellagra indicates to some extent the frequency of the disease in the various regions of Louisiana.

DEFICIENCY DISEASES AT CHARITY HOSPITAL

The experience at Charity Hospital of New Orleans with reference to all the vitamin deficiency diseases is tabulated in table 4. There were 388 patients, the study of whose records allowed definite confirmation of the diagnosis on the basis of clinical description and/or laboratory and therapeutic results. These cases occurred among 56,761 medical admissions. Pellagra leads

both in frequency and as the cause of death. Of the 38 deaths, 76 per cent were caused by pellagra. The close association of the various components of the vitamin B complex is evident from the fact that 20 per cent of the pellagra cases were mixed deficiencies of nicotinic acid, thiamin and/or riboflavin. This probably represents a minimum of multiple deficiencies in pellagra. Goldsmith⁵ has shown by laboratory methods that these patients are frequently deficient in vitamin C also. Only one of our pellagra patients had a clinical diagnosis of scurvy, but there was a very frequent association of scurvy with rickets in infants and children.

The role of alcohol in the pathogenesis

TABLE 4
INCIDENCE OF CLINICAL VITAMIN DEFICIENCY
STATES IN CHARITY HOSPITAL OF NEW ORLEANS
1937-1941

	1937	1938	1939	1940	1941	Total	Deaths	Per Cent Deaths
Pellagra—non-alcoholic	22	13	38	19	19	111	18	16.2
alcoholic	0	1	2	1	1	5	2	40.0
Pellagra with neuritis—non-alcoholic.....	2	1	7	2	4	16	3	18.7
alcoholic.....	0	0	1	0	2	3	1	33.3
Pellagra with ariboflavinosis.....	0	0	2	3	1	6	0	00.0
Pellagra with neuritis and ariboflavinosis	0	0	2	0	1	3	0	00.0
Pellagra sine pellagra—non-alcoholic.....	3	2	13	9	5	32	4	12.5
alcoholic.....	0	1	1	1	0	3	1	33.3
Pellagra sine pellagra with neuritis.....	1	1	4	1	2	9	0	00.0
Polyneuritis—non-alcoholic	8	3	21	15	12	60	0	00.0
alcoholic	2	3	12	10	8	35	1	03.0
Ariboflavinosis	0	0	3	1	2	6	0	00.0
Rickets	7	5	16	21	18	67	8	12.0
Scurvy	3	3	5	11	10	32	—	—
Total						388	38	10%

of pellagra is relatively minor here compared to primary nutritional deficiency. However, its influence on mortality is evident. In this group 36.4 per cent died compared to 14.9 per cent in non-alcoholic pellagra. Polyneuritis conditioned by the effects of alcohol was considered due to thiamin deficiency only if a prompt therapeutic response occurred. The rest of the group of polyneuritis were uncomplicated by diabetes, pregnancy, or other conditions.

SUMMARY

The whole gamut of nutritional deficiency is a problem in public health and prevention. Disability from vitamin A, D, and C deficiencies arises mainly in the period of growth of the child. Prevention must be carried out by the physician and parents educated in the use of substances containing these vitamins. In the case of thiamin, nicotinic acid and riboflavin the problem is essentially one in adults. With the sole exception of thiamin, which is present in limited quantities in most foods, food fortification is mainly a stop-gap procedure but an important one. The real roots of the problem are low cash income, poor eating habits, or poor use of the soil. These are the common denominators of all nutritional diseases. The conclusion is inescapable that their correction requires a directed and unified effort of agencies and groups compe-

tent to deal with them, and not by the medical profession alone.

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DISCUSSION

Dr. George W. McCoy (New Orleans): Dr. Lowe's very excellent paper illustrates how we make progress in public health. I was especially glad that he mentioned Dr. Joseph Goldberger's brilliant investigations which began about 1915 and which led to the solution of the pellagra problem; research must precede successful application in preventive medicine.

Those of us especially interested in the public health field have been thinking too long in terms of deficiency disease, only in very recent years have begun to think of nutrition in its broader aspects. The public health movement has entered this field and many health departments have a nutritional program and nutritional experts. And why should it not be so; if it is admitted that it is a legitimate function of government, general, state or local, to prevent communicable disease, for example, typhoid fever and diphtheria, why should not the same agency be interested in the prevention of pellagra,

scurvy, rickets and other nutritional deficiency diseases? The answer of course is that it should be.

There are some enthusiasts who, I am sure, lay too much stress on nutritional conditions, but we do not need to be of this group to realize that the question is a very important one. There are a number of factors in the nutrition problem, especially under-nutrition. First, and by far the most important, is the economic factor. As one authority puts it, "Nutrition has moved from the field of physiology to that of economics." Another one says there is doubtless a "close association between low incomes and deficient diets." To put it baldly most malnutrition is due to the lack of resources to provide an adequate diet. Government interest in this subject began to take a definite form in the latter days of the Hoover administration, when it was realized that much of the population of the country was in dire economic straits and undernourished as a result of the then prevailing depression, and a modest appropriation was made by Congress. The government program has been carried out by direct money allowances, by distribution of surpluses, by Works Progress Administration projects and funds. In another direction a start has been made by the use of food stamps, penny milk, and free school lunches.

The question is asked in the Bible as to whether I am my brother's keeper. The answer now in this country is definitely in the affirmative. Again let me say that the basic factor in nutritional deficiency disorders is a low income. There are other factors; for example, education as to the proper use of what people have and also fixed dietary habits which may have to be modified. The latter is well illustrated by our reluctance to switch over from white bread to whole wheat bread; here we have made a compromise by adopting fortified white bread which contains added vitamins and minerals and which, I am told, now supplies nearly one-half of the commercial demand for white bread. Owing to long fixed habits the average American consumer definitely does not want whole wheat bread, although it might be much better for him.

Now let us see what war has done elsewhere in relation to nutrition. By way of illustration I give you the following figures: It is reported that the ration in Belgium, Holland and unoccupied France amounts to 1400-1500 calories per day and that the figure for Spain is 800-900 calories. Of course, I realize that calories do not tell the whole story but I am sure that we will all agree that these are all grossly inadequate diets.

Our present interest in this subject is due not to altruism in Washington or elsewhere, but to the need of effective manpower. General Hershey is quoted as saying that of the selective service examinations "Perhaps one-third of the rejections were due either directly or indirectly to nutritional deficiencies."

From another source in one of the papers presented at this meeting late last evening when most

of you were not present, we learned that there were 900,000 rejections among the first two million men examined, just 45 per cent. If one-third of these rejections were for nutritional conditions that would mean about 300,000 men. In other words about 20 divisions, and I leave it to you to decide whether, if we had 20 more divisions ready for military use at this time, they might not be of great value.

I understand that the Federal Security Agency has set up nutritional committees and boards in every state in the Union and I feel certain that as a result of the interest and agitation of this subject a better dietary for the American people ought to be brought about. The Secretary of Agriculture has said "Food will win the war and write the peace."

Dr. Charles T. Stone (Galveston, Texas): About 12 years ago, I had lunch at the Cosmos Club in Washington with Dr. Goldberger. We had an ordinary American luncheon, and Dr. Goldberger said as we began to eat that if every American ate food such as this there would not be any pellagra. Now, we know that pellagra today is largely a vanishing disease, and we know why it is a vanishing disease. It is so because in many ways we have come to understand its fundamental nature. But I wonder if we know as much as we think we know about this nutritional or deficiency disease?

I suppose most of you unconstructed Rebels and some of you Yankees who came down later read that very interesting book, "Gone with the Wind," and you will recall that along toward the latter part of the book, Miss Mitchell said that after the war, in the so-called reconstruction days, around Atlanta, tuberculosis became very prevalent in previously rich families, and pellagra, which had theretofore been known only among negroes and poor whites, began to appear in Atlanta's best families. Well, anyone who knows the history of the South in the carpetbag period knows that despite the tremendous deficiency of fundamental food stuffs, as far as the record goes, pellagra did not exist. To me, that has been always one of the mysteries of this disease. There could not have been, as I see it, any more striking food deficiency in any place, at any time, in any section, than existed in the South at that time. Yet, until George Searcy, who was an interne at the Alabama State Hospital for the Insane, inspired by the writings of certain Spanish physicians, described pellagra in the institution where he worked, in 1907, was pellagra recognized as an American disease at all. Now, I have talked with a good many people who were conversant with the situation in 1907, and they feel very largely that looking backward, they could possibly detect an occasional instance of pellagra prior to Searcy's description of it in this country, and yet they are almost unanimous in the opinion that it was extremely rare, if it existed at all. I would be extremely obliged if Dr. McCoy

or some of the men who were familiar with the difficulties that existed in the South after the Civil War could supply the information that would suffice to fill the gap in our knowledge in that respect.

I think that undoubtedly the fact that Dr. Goldberger was successful in proving canine black-tongue and human pellagra were identical did much to enable us to study pellagra in a scientific way, very much as we study infectious diseases now. I think that the knowledge he developed in his laboratories, that certain types of foods would prevent the development of black-tongue in dogs was indeed helpful in developing a rational therapy for the human being, but Elvehjem's discovery of nicotinic acid marks the beginning of modern clinical therapeutics of the disease. But as Dr. Lowe pointed out the incidence is steadily down, and has been so for many years even before the newer knowledge of pellagra was developed.

And while I cannot subscribe to all of the present day socialistic activities of our government, I am in accord with those who believe that the people who are unable to supply themselves with an adequate food supply should have it furnished to them by governmental agencies. Such a practice is both humane and economically profitable.

Dr. Roland Young (Covington, La.): Since alcohol is indulged in so much now, I thought it might be timely to mention the occurrence of vitamin deficiency in alcoholism.

The alcoholic patient, especially the periodic type who gets on prolonged debauches will sometimes be found with multiple neuritis and Korsakoff's psychosis. These cases will often go about two weeks without appreciable food. This has been shown definitely to be due to vitamin deficiency. Along with that I may mention that reliable literature out of Boston has shown that even though the patient is a chronic alcoholic, though of sufficient saturation or degree, may also develop some condition as beriberi and my experience confirms this too. It is thought that alcohol may retard, if not actually stop the metabolism of these vitamins. Perhaps somewhat analogous to this, morphine slows the basal metabolic rate either by depression of the thyroid or in retarding the oxidation of its secretion. This is definitely an established fact found in our experience, both by clinical evidence and metabolic checks.

Dr. R. C. Lowe (In closing): I am very much pleased to have had Dr. McCoy and Dr. Stone say some of the things I would like to have included in the short time I had. But their remarks have completed to a greater extent the picture of pellagra that we must hold with us in order to reduce the mortality and ultimately eliminate pellagra from the United States.

FRACTURES ABOUT THE ANKLE JOINT*

RUFUS H. ALLDREDGE, M. D.†
NEW ORLEANS

The frequency with which fractures occur at the ankle joint and the importance of treatment of these injuries is well established. Despite the importance of fractures and other injuries about the ankle, amazingly little has been written about them in contrast to the amount of material which has been written about some other joint fractures.

This presentation is based on a three year study of 56 cases of ankle injuries which require hospitalization. Investigation of the physiologic and anatomic aspects of the ankle has been of great help in understanding the mechanism of injury as well as in carrying out more adequate diagnosis and treatment. A thorough understanding of the mechanism of the injury and the pathology present in each case is more important than the choice of the method of treatment to be used.

ANATOMY OF THE ANKLE

The important ligaments of the ankle joint are as follows (fig. 1): (1) the an-

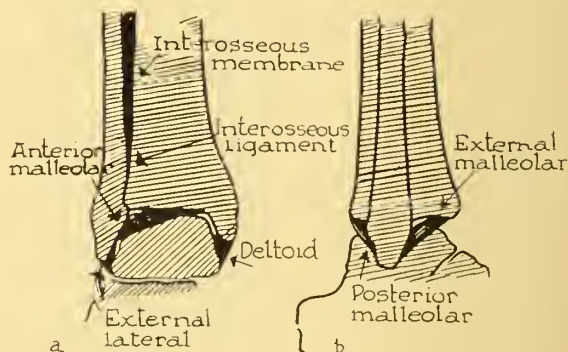


Fig. 1

terior malleolar; (2) the posterior malleolar; (3) the interosseus ligament and the interosseus membrane; (4) the exter-

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nal lateral ligament; (5) the deltoid ligament.

The deltoid and external lateral ligaments stabilize the astragalus in the mortice. The anterior and posterior malleolar and interosseus ligaments and membrane stabilize the fibula to the tibia and hold the ankle mortice together (fig. 1).

The anterior dorsal joint surface of the astragalus is 25 per cent wider than the posterior surface, and for this reason the ankle is more unstable when the foot is plantar flexed than when the foot is dorsi-flexed. When the foot is dorsi-flexed the wider part of the astragalus comes up into the mortice and forces the fibula slightly outward and backward so that the mortice can accommodate the wider anterior part of the astragalus.

MECHANISM OF ANKLE FRACTURES

Fractures of the ankle occur by: (1) external rotation; (2) abduction; (3) adduction; (4) compression. Only the first three types of fractures will be considered in this discussion, as they are the most common.

FRACTURES BY EXTERNAL ROTATION

Fractures caused by external rotation may occur when the leg is fixed and the foot is externally rotated, (fig. 2-a), or

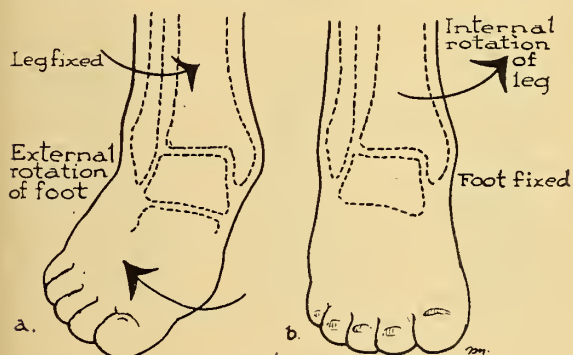


Fig. 2

when the foot is fixed and the leg is internally rotated (fig. 2-b).

When an external rotation injury takes place at the ankle the following sequence of events, which may be interrupted at any point, occurs as the force is continued.

1. Rupture of the anterior malleolar ligament (fig. 3-a).

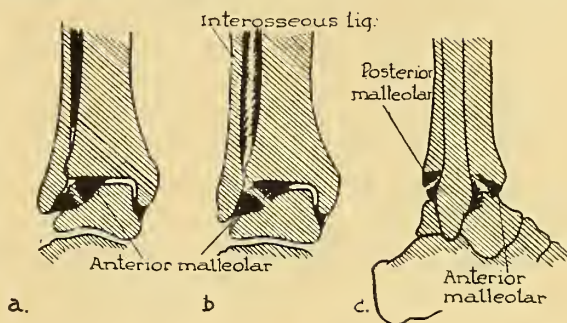


Fig. 3

2. Rupture of the interosseus ligament and interosseus membrane (fig. 3-b).

3. Rupture of the posterior malleolar ligament (fig. 3-c).

4. Rupture of the deltoid ligament (fig. 4-a).

5. Avulsion of the lateral margin of the tibia may take the place of the rupture of the ligament. This avulsed fragment may become interposed and wedged between the tibia and fibula in an abnormal manner (fig. 4-b).

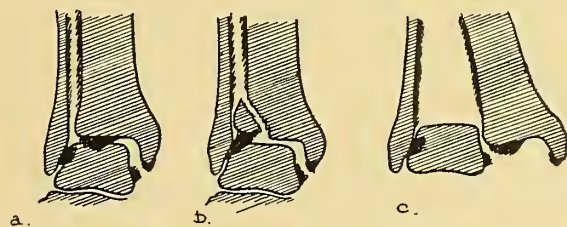


Fig. 4

6. The ankle mortice may be widened after the deltoid has given away to such an extent that the astragalus becomes displaced upward between the tibia and fibula (fig. 4-c).

7. The internal malleolus may be avulsed by the deltoid ligament if the deltoid fails to rupture (fig. 5-a).

8. The fibula fractures obliquely in an anteroposterior direction. It usually fractures low down, just above the malleolus, but may occur anywhere including the upper third. Fracture of the fibula does not take place until the deltoid has

ruptured and the tibio-fibular ligaments have ruptured, giving rise to a tibio-fibular diastasis (fig. 5-b).

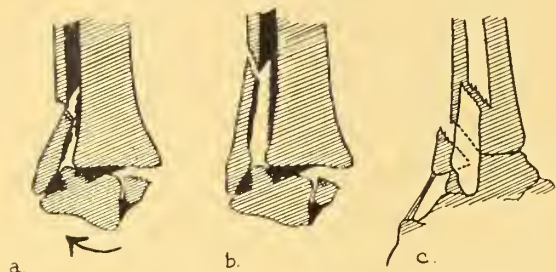


Fig. 5

9. The posterior articular margin of the tibia may be fractured and displaced backward and upward by the forward force of the tibia on the astragalus at the time of the injury. When both malleoli are fractured this fracture may be present. The term tri-malleolus fracture has been used to describe the injury. This term is not adequate because it fails to mention the ligamentous injury which is often more important than the bone injury itself. If the posterior marginal fragment is small, it is insignificant. If it involves as much as a third of the distal end of the fibula it is a most serious injury (fig. 5-c).

MECHANISM OF ABDUCTION FRACTURES

Abduction fractures occur when the foot is forcibly abducted on the fixed leg (fig. 6-a), when the leg is adducted on the fixed

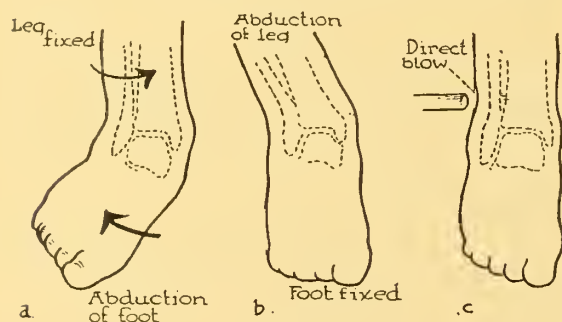


Fig. 6

foot (fig. 6-b), or when a direct blow is struck over the lateral aspect of the leg when the foot is fixed (fig. 6-c).

The following sequence of events occurs

when abduction in the above manner takes place at the ankle:

1. The deltoid ligament is ruptured (fig. 7-a).
2. The internal malleolus may be avulsed instead of rupture of the deltoid ligament (fig. 7-b).

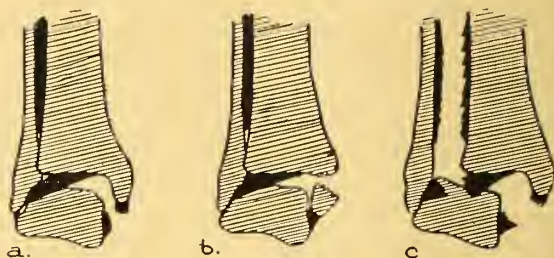


Fig. 7

3. The anterior and posterior ligaments are ruptured and at the same time the interosseus ligament and the interosseus membrane are ruptured, producing a tibio-fibular diastasis (fig. 7-c).

4. The fibula is fractured transversely somewhere in the lower third (fig. 8-a).

5. Fracture of the internal malleolus combined with rupture of the anterior and posterior malleolar ligaments and fracture of the lower third of the fibula is the commonest form of abduction injury and is referred to as Pott's fracture (fig. 8-b).

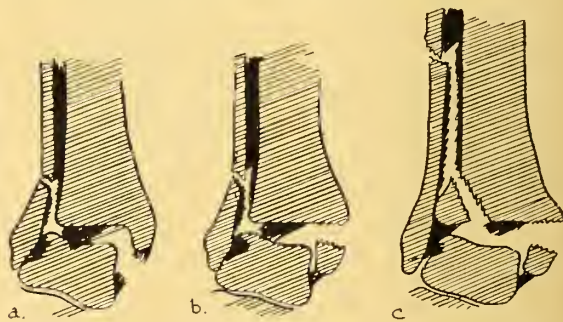


Fig. 8

6. The lateral margin of the tibia may be avulsed and takes the place of rupture of the malleolar and interosseus ligaments (fig. 8-c).

7. When the deltoid ligament is ruptured the anterior and posterior malleolar and interosseus ligament and membrane are also

ruptured: a pure ligamentous injury may result with no fracture whatsoever. Tibio-fibular diastasis is the outstanding component of the injury (fig. 9-a).

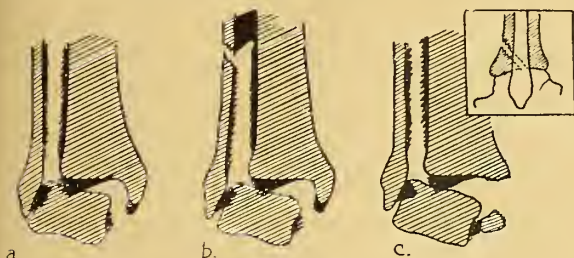


Fig. 9

8. The above injuries may be accompanied by a fracture usually in the lower third of the fibula (fig. 9-b).

9. Fracture of the internal malleolus, instead of rupture of the deltoid, and posterior tibial marginal fracture is another combination of abduction injury (fig. 9-c).

MECHANISM OF ADDUCTION FRACTURES

Adduction fractures occur when the foot is forcibly adducted and inverted (fig. 10).



Fig. 10

When the foot is forcibly adducted and inverted the following sequence of events may take place:

1. Rupture of the external lateral ligament of the ankle joint. This results in instability and tilting of the astragalus in the mortice (fig. 11-a).

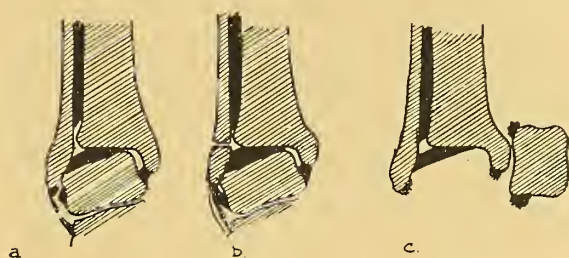


Fig. 11

2. Avulsion, transverse fracture of the malleolus at the level of the ankle joint occurs when the external lateral ligament holds (fig. 11-b).

3. Rupture of the deltoid ligament and complete dislocation of the astragalus, medially, usually accompanied by compounding of the dislocation. The internal malleolus may be fractured instead of rupture of the deltoid ligament. In this case the internal malleolus is fractured vertically, the fracture extending into the shaft of the tibia (fig. 11-c).

4. A typical adduction fracture of the ankle consists of a transverse fracture of the external malleolus at the level of the ankle joint and an oblique fracture of the internal malleolus extending upward into the shaft of the tibia. There is never rupture of the tibio-fibular ligament with diastasis in adduction injuries. The posterior tibial margin may be fractured (fig. 12).

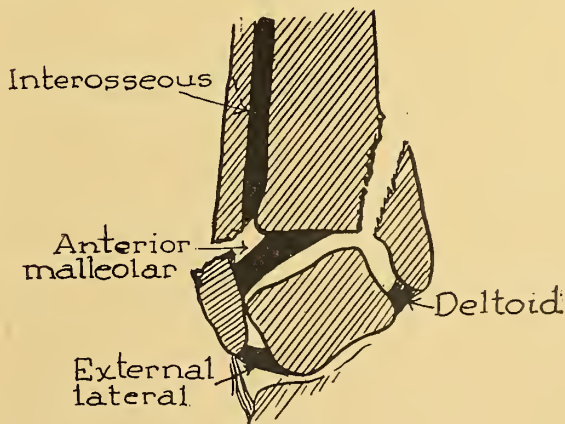


Fig. 12

It can readily be seen that in any of these types of ankle injuries the severity of the injury depends upon the time at which the injuring force is discontinued.

DIAGNOSIS OF INJURIES ABOUT THE ANKLE JOINT

Adequate clinical examination of the injured ankle includes careful detailed search for the various points of localized swelling and tenderness over the ligaments and over the bony points at which fractures frequently occur (fig. 13). A thorough un-

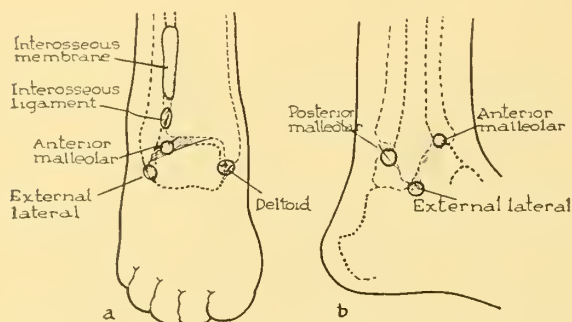


Fig. 13

derstanding of the anatomy and of the mechanism of ankle injuries is essential for a proper clinical examination of these cases.

X-ray examination should be carried out routinely in all ankle injuries in which there are pain, swelling and disability. An anteroposterior view of the ankle joint with the malleoli equidistant from the x-ray film is the one of choice. The lateral view should be taken with the external malleolus near the film if a fracture of the external malleolus is suspected, and with the internal malleolus near the film if a fracture of this structure is suspected. It may be determined from the anteroposterior and lateral views if oblique views are indicated, and if so, they should be taken. Fluoroscopic examination of the ankle should be condemned. If tibio-fibular diastasis is suspected because of pain and tenderness over ligamentous structures, especially the deltoid and interosseus ligament, an anteroposterior view should be taken with the fibula sprung away from the tibia. Abnormal widening of any joint space may be indicative of extensive ligamentous rupture.

It is only by careful evaluation of the clinical findings correlated with proper x-ray views that intelligent diagnosis of ligamentous and bone injuries can be made.

TREATMENT

The treatment of injuries of the ankle can be carried out properly and intelligently only after an adequate clinical and x-ray diagnosis has been made from a thorough study of the individual case. The treatment, therefore, will vary with the extent and variety of the individual lesions.

RUPTURE OF THE ANTERIOR MALLEOLAR LIGAMENT

Rupture of the anterior malleolar ligament commonly occurs as an isolated injury. Tenderness and pain are present over this ligament only. The individual is not disabled, but has considerable pain on walking. Support, in the form of repeated ankle strappings or the unna boot, for from four to six weeks, usually results in disappearance of the symptoms (fig. 14). The use

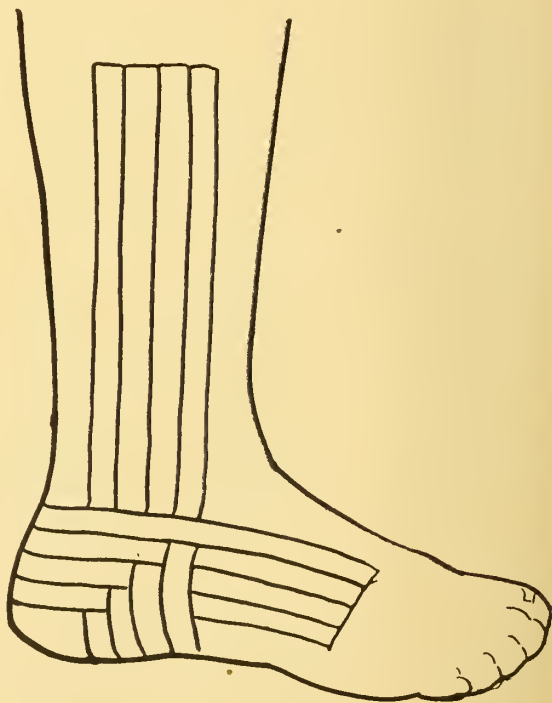


Fig. 14

of novocaine locally has been disappointing in the experience of the writer.

RUPTURE OF THE ANTERIOR AND POSTERIOR MALLEOLAR LIGAMENTS

When both of these ligaments are injured the same treatment may be carried out as in the case of the anterior ligament alone. Disability may be somewhat longer.

RUPTURE OF THE ANTERIOR MALLEOLAR LIGAMENT, POSTERIOR MALLEOLAR LIGAMENT AND INTEROSSEUS LIGAMENT AND INTEROSSEUS MEMBRANE

When these structures are injured alone, disability is still not very great and although a strapping or the unna boot may be used, recovery would undoubtedly take place sooner with the use of a walking plaster for four to six weeks.

RUPTURE OF THE ANTERIOR AND POSTERIOR MALLEOLAR LIGAMENTS, INTEROSSEUS LIGAMENT AND INTEROSSEUS MEMBRANE TOGETHER WITH RUPTURE OF THE DELTOID LIGAMENT

It should be remembered that the astragalus does not displace laterally and tibio-tibular diastasis does not take place clinically or anatomically until or unless the deltoid ligament is ruptured or the internal malleolus avulsed. If the astragalus is not displaced laterally at the time the injury occurs, it may become displaced after weight bearing. The tibio-fibular diastasis must be reduced, the astragalus displaced medialward against the internal malleolus and thoroughly maintained in this position until healing of all the ligaments has taken place. After reduction of the diastasis, im-

mobilization in plaster for at least three months is always indicated. If difficulty is experienced in maintaining reduction of the diastasis, the fibula should be fixed to the tibia by means of a screw inserted through a small incision over the distal third of the fibula. After this a skin-tight plaster with a walking iron may be used for a three months period. It is the opinion of the writer that these patients should not be allowed to bear weight even in a skin-tight plaster unless the fibula is fixed to the tibia by means of a screw or other means.

The deltoid ligament may become interposed between the astragalus and the malleolus, in which case open reduction and suture of the ligament should be carried out.

AVULSION FRACTURES OF THE LATERAL MARGINS OF THE TIBIA ASSOCIATED WITH RUPTURE OF THE DELTOID OR FRACTURE OF THE INTERNAL MALLEOLUS AND TIBIO-FIBULAR DIASTASIS

This fracture should always be looked for, because if present the fragment may become rotated between the tibia and fibula and prevent reduction of the fracture and closure of the tibio-fibular diastasis. If it interferes with closed reduction it must be opened and replaced or removed.

RUPTURE OF THE DELTOID LIGAMENT ALONE

This injury may occur as the first stage of an abduction fracture and may exist as an isolated injury. If the ligament is not interposed between the astragalus and internal malleolus, immobilization in a skin-tight plaster with a walking iron should be carried out for a period of eight to twelve weeks.

EXTERNAL ROTATION AND ABDUCTION FRACTURES

Although the mechanism of these two types of fractures is somewhat different the injury is frequently the same. They are collectively referred to as Pott's fracture. The use of general anesthesia is preferable to that of local. The leg is allowed to hang over the end of the table and to be flexed at a right angle at the knee. Traction is made on the heel and forefoot, and with one hand on the inner aspect of the leg, the leg is pushed outward, while with the other hand over the external aspect of the ankle,

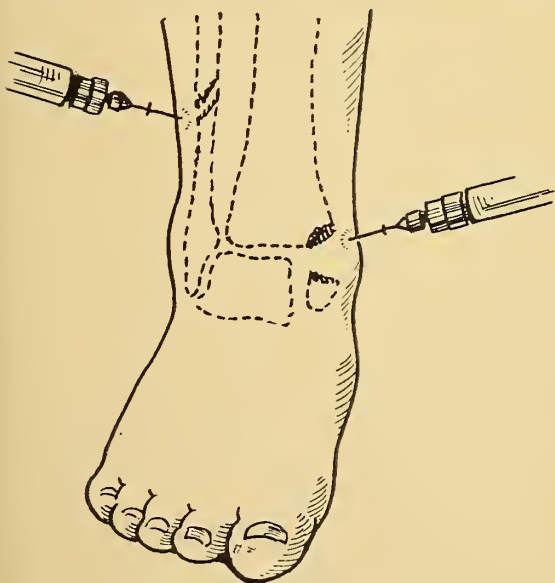


Fig. 15

the foot and ankle are replaced inward. If a posterior marginal fracture of the tibia is present, after the malleolar fracture is reduced, the foot is pushed into dorsi-flexion two or three times, but not kept in dorsi-flexion. Maintaining the foot in a position of dorsi-flexion in these cases tends to widen the malleoli and does not help to keep the posterior fragment of the tibia down into position.

A plaster cast is applied over padding from the tibial tubercle to the tips of the toes, with the foot maintained in the reduced position by the operator while the plaster is being applied. The plaster is well moulded, pushing the ankle and foot toward the medial side while the plaster sets. The foot is kept in a neutral position, in 5 to 10 degrees plantar flexion, and is never adducted or inverted. It is kept elevated as much as possible for the next three weeks, at the end of which time the plaster may be changed and a skin-tight plaster applied with a walking iron. If these patients are allowed to walk during convalescence frequent re-x-ray examination should be carried out to discover displacement. Immobilization should be kept up for at least three months. After this weight bearing with crutches and with the use of the unna boot or adhesive strapping is continued until all swelling has subsided and pain has disappeared.

It will be frequently found on checking post-reduction x-rays that reduction has been anatomically accomplished. X-rays taken before the plaster has been applied and after reduction has been attempted may aid in some of these cases. In many cases, however, it will be found that open reduction and internal fixation of the internal malleolus will improve anatomical position and maintain reduction so that re-displacement cannot possibly occur. Fixation of the fibular fragment to the tibia with a screw in these cases also stabilizes the fracture.

If the posterior marginal fragment is small, it seems to make no difference whether anatomic reduction is accomplished or not. If the fragment involves as much as a fourth or third of the articular surface

of the tibia, however, open reduction must be resorted to for anatomical reposition if this cannot be accomplished by manipulation. This can be accomplished by a posterior incision with retraction of the tendo-Achilles, or by the lateral approach, in which case the fibula is turned downward at the fracture site and the posterior marginal fragment reached from the lateral aspect.

ADDUCTION FRACTURES

The treatment of these fractures is essentially the same as that of abduction and external rotation fractures. Here, however, the displacement is different and tibio-fibular diastasis is not a problem. These fractures are reduced in the same manner as the other fractures with the leg hanging over the end of the table. Gentle traction is made with the hand over the forefoot and the heel, and the malleoli are displaced laterally and forcibly, instead of medially as in the case of the other types of fractures. If anatomic reposition can be obtained, a short leg plaster cast is applied and nothing further is necessary in the way of reduction. In some of these cases, however, it will be necessary to open and fix the internal malleolus so that anatomic reposition of the fragments can be had. The after care is essentially the same as that for the other types of fractures.

RESULTS IN FIFTY-SIX CASES

In the past three years, since January 1939, a total of 56 ankle fractures has been observed. Twenty-nine of these were external rotation fractures, 21 were abduction fractures and six were adduction fractures.

Of the 56 cases, 29 were treated closed and 27 were treated by open reduction and metal fixation of one type or another.

The results are known in 41 of the 56 cases. No attempt was made here, and it is not the purpose of this presentation to analyze these cases in detail. It should be mentioned, however, that the cases in which open reduction and internal fixation were used had previously been subjected to attempts at closed reduction. Open reduction was done on the majority of the 27 cases

because the position of the fragments in some way or other was not considered satisfactory. For purposes of this presentation, the results on the 41 cases on which the end results are known, have been divided into two groups, good and poor. There were 31 good and 10 poor results. Of the good results, 10 had closed reduction and 21 had open reduction and internal fixation. Of the poor results, seven had closed reduction and three had open reduction.

The poor results treated by closed reduction could be accounted for by improper anatomic reposition of the fragments at the time of the closed reduction in most cases. In some others the reduction was satisfactory at the time, but later some fragment re-displaced and gave a poor result. In a few cases, non-union of the lateral malleolus occurred and these were routinely classed as poor results. Practically every one of these seven poor results from closed reduction could have been converted into a good result by having had an open reduction, or at least better re-apposition of the fragments at the time of reduction.

The three poor results following open reduction were due to failure to open and fix the internal malleolus in two cases and to infection in one case.

On studying these end results it is apparent that absolute anatomical reposition of the fragments is necessary and that they be maintained reduced actively throughout the course of treatment until bony union is obtained.

SUMMARY

Fractures and other injuries of the ankle joint have been studied and presented from the standpoint of anatomy and function of the ankle. It has been shown that ligamentous injury is as important and in some cases more important than the fracture itself. The stability of the ankle joint is dependent not only on the bony structure but on ligaments. Disturbance in form or alignment of either of these structures may give equally poor function. The chief aim in the treatment of any ankle injury is to restore painless function. This can only be done by restoring the anatomical structure

and maintaining restoration until healing has taken place.

The mechanism of ankle injuries has been described in detail. It is only by a thorough understanding of the anatomy and the mechanism of ankle fractures that a proper clinical consideration can be given. Correlation of the clinical and x-ray findings is necessary because of the importance of the ligamentous injuries which are not revealed in the x-ray.

The treatment of ankle injuries has been outlined for injuries of the ligaments as well as for fractures of the bone.

Fifty-six cases have been observed, treated and studied, and the results from the closed and open procedures summarized. A critical analysis of the results indicate that improvement can still be made by the lessons learned from the study of these cases.

Note: The writer is indebted to Dr. Guy A. Caldwell for making this study and presentation possible.

DISCUSSION

Dr. Isidore Cohn (New Orleans): Just a few words to remind you that time has resulted in many of us forgetting the history of a lot of things. A few years ago one of the distinguished surgeons in the middle west undertook to bring out from the dusty tomes something about fractures of the ankle. Some of you may remember the late Dr. Ashley Ashhurst of Philadelphia, probably the most meticulous man about the history of, or the origin of things. After he had read a paper by this distinguished surgeon he wrote a paper about fractures of the ankle. The opening sentence reminded the profession of statements made by Sir Percival Pott (1769) with reference to fractures of the ankle. The fundamental principles which Pott formulated at that time hold good today. If the normal mortice is disturbed by any fracture, fracture of the tibia or fibula, you will have a non-weight bearing ankle. Following that particular conception, long before the conception of "diastasis," it was appreciated that a loss of that normal mortice was the essential thing as far as weight-bearing was concerned. In order to have a weight-bearing ankle you must have the external and internal malleoli in their normal positions. For years many people have stated that the fibula is not a weight-bearing bone. No one will state it is definitely a primary weight-bearing bone. The fibula is indirectly a weight-bearing factor because disturbance of its axis allows some rotation of the astragalus.

Furthermore in regard to sprain I have talked

about sprains so much that folks are tired hearing it—I took my cue from Ross and Stewart some thirty years ago following their experimental work on animals. Their conclusion was that ligaments attached to small bony prominences have more tensile strength than the bony prominences to which they are attached, and therefore the ligaments will not tear before the bone gives way. Probably some of you were raised in the country, as I was, and probably you remember having swung on the old barn door, the hinges of which were made of leather held fast by nails. You will recall that in case of accident the nail with a small piece of wood would loosen rather than the leather tear. The diagnosis sprain is hypothetical. I think that we have fractures and if we would get pictures in sufficient number of planes we would see fractures that probably otherwise would be overlooked. Many of these can be treated very definitely by using a plaster cast and we do not have to operate. Very often we have rather interesting fractures about the ankle especially those where there is a fracture of the internal aspect of articular surface of the tibia accompanied by fracture of the fibula.

I would like to call Dr. Alldredge's attention to the fact that Gibney had used adhesive plaster strapping before Whitman.

Personally I would like to leave with you one thought—quit talking about so many sprains and look for fractures and treat the fracture primarily. Let us stop recording as something new, things preserved in surgical tomes over one hundred years ago.

Major Waring (New Orleans): Dr. Cohn asked me if I would discuss the paper of Dr. Alldredge on fractures of the ankle. I think Dr. Alldredge gave a very good presentation on this. It is necessary, I think, that one know the mechanism of the fracture and take into consideration all the facts. Dr. Cohn brought out very ably the fact that frequently when we think there is a sprain, it is a fracture. We see this happen frequently. Also I feel that there is a great tendency among the medical profession to say—this man does not have a fracture, all he has is a sprain—without adequate study. In other words, the patient is then not adequately treated for the condition present. We should keep the possibility of a fracture in mind whenever a patient comes in with a sprained ankle and not be satisfied until we have ruled it out.

Another thing was the remark about the taking of x-rays. I think we should take all views possible in order to establish a diagnosis. It is important to get true A. P. and lateral views.

Another point—I have always encountered difficulty in fractures of the internal malleolus, and usually find it necessary to fix the malleolus by means of internal fixation.

Dr. Guy A. Caldwell (New Orleans): I rise only

to endorse Dr. Alldredge's paper. The necessity for accurate x-ray studies has been adequately covered by the others who have discussed the paper. However, I would like to add that in an acutely injured ankle, all the positions which are desired may not be obtained unless the ligaments are injected with novocain. The foot can then be turned into various positions necessary for adequate x-ray study without hurting the patient.

The only other point I would like to stress is that in the presence of definite diastasis, which has been shown to occur more frequently than we thought, a longer period of immobilization is necessary. If adequate studies are made and the treatment outlined by Dr. Alldredge is consistently carried out, as he explained, the necessity for open reduction would be diminished considerably. If this treatment is not followed, open reduction should be performed in order to get the ankle in accurate position because certainly the wobbly, unstable ankle joint is not only undesirable but also disabling.

Dr. J. T. O'Ferrall (New Orleans): Dr. Alldredge's paper, I think, is very important but it seems to me there are one or two practical points that would be of value to the men in the rural districts, who are not equipped to operate and who would probably appreciate a review of the positions of the foot about which there seems to be considerable confusion. I have always felt that the terminology applied to the foot and ankle is frequently mis-stated and, as I said, it is very confusing. For instance in Dr. Alldredge's paper he spoke of eversion and inversion of the foot. Inversion and eversion can not be applied to the foot but to the leg. Confine this to pronation and supination; pronation with so-called eversion and supination with so-called inversion.

I believe it is wise for men to try and confine their remarks to the accurate description, if possible, of the exact position of the foot. I feel also that when dealing with sprains that the paramount issue is to relieve the ligament injured of undue tension or further strain and if we apply the old-time Gibney splint, which I never use, we would be inclined to put on the splint in the neutral position. I am much more in favor of using some type of spiral strapping which will hold the foot in supination or pronation, depending upon position desired. If you want to pronate, put the short end of strapping on inner side and spiral on outer side and it will hold the foot in pronation. If you desire supination, the short end should be put on the outer and spiral around the inner side. That relieves either internal or external ligaments of strain or further tension.

I believe that in the vast majority of cases of Potts' fractures reduction should be done under anesthetic and then by fixing the foot, in the majority of instances in supination and plaster, you can reduce the fracture satisfactorily. Of course there are severe cases in which displacement of

fragments is present and you do have to use a screw, which Dr. Alldredge mentioned.

Dr. Rufus H. Alldredge (In closing): In reference to the question as to why ligament rupture takes place in the ankle as referred to by Dr. Cohn, is not a matter to be decided apparently here at this time. I would like to refer you, however, to a great many men who have written on ankle injuries: Drs. Darrow and Murry of Columbia University; Dr. Key and Dr. Conwell; Dr. I. W. Jones of Liverpool. What they say about these things may not be right but at least they make an attempt to clarify some things in these ankle injuries.

As to the use of Whitman strapping, it is somewhat different from Gibney strapping. Gibney is older than Whitman; the Whitman is somewhat modified and should be used according to indications for use. It is applied for different things and it depends on what the strapping is used for as to how applied.

I appreciate the discussion. I especially appreciate Dr. Cohn's discussion in reviewing the history of ankle fractures, which is important and I did not have time to cover.

MEDICOLEGAL RELATIONS OF NERVOUS AND MENTAL DISORDERS*

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NEW ORLEANS

Physicians, while considering the welfare of the individual as a whole, are rarely ever versed in law. Lawyers, on the other hand, seldom know much about medicine, being concerned with the acts of individuals. Therefore psychiatry and the law are often in conflict.

Psychiatry treats of mental illness; its subject matter is abnormal behavior. In psychiatry there is no substitute for experience, and to the trained observer nothing determines more conclusively whether or not there is mental disorder than the things one does and says. Laws relating to mental illness were framed to protect society and to safeguard the rights of the sick person.

The terms insanity and crime do not indicate the sort of person involved. Insanity is a legal term which means mental incapacity either from the standpoint of civil

or criminal law. A person may be wholly incapacitated and of unsound mind from a medical standpoint and yet thoroughly sound and capable from a legal viewpoint, for no one is insane until adjudicated so by a court of competent jurisdiction after a proper and lawful trial. Insanity is always the result of mental impairment, but not all mental illness constitutes insanity in its legal sense. Medically it is impossible to draw a hard and sharp line between sanity and insanity. There is no sign or symptom that alone is absolutely indicative of insanity, and contrary to much popular belief, insane people may behave in many respects like sane people. Physicians in court must take the law as it is, but their answers to technical questions should be in agreement with medical experience.

The symptoms of mental disorder consist of all degrees of abnormal behavior, from that type which is merely peculiar or eccentric to that which is observed in definite major mental disease. Character and personality changes are often early evidence of the existence of mental disorder.

The general symptomatology of mental illness includes: (1) disorders of perception—illusions and hallucinations; (2) disorders of consciousness; (3) disorders of memory; (4) disorders of the emotions—the feelings; (5) delusions; (6) disorders of the impulses; (7) compulsive ideas and compulsive actions.¹ Manifestations from each of these groups appear as symptoms of mental illnesses which may have forensic implications and relations.

The diagnosis in mental disorders can seldom be accurately made unless the examiner is experienced and has had an opportunity to investigate the subject's family and past personal history and adequately to observe and examine him under varying conditions.

The degree of mental capacity that is required differs with different relations, but if a person is mentally sound he will be held responsible either civilly or criminally. The real criterion of responsibility is the existence or not of mental disorder which interferes with law-abiding conduct. The

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

psychiatrist in court is a witness, not a judge or jury. McCarty¹ thinks psychiatrists should be required to testify as to whether or not a person is mentally capable of knowing that his act is forbidden and punishable and that the judge and jury should decide the questions of responsibility and whether a person knows right from wrong.

The legal side of mental illness has a four-fold aspect: its relations to crimes, contracts, wills, and claims for injuries and disability.

The jury, in a criminal court, tries to ascertain whether the accused had the evil intention or mind to commit the crime with which he has been charged, and, unless this intention has been proved beyond a reasonable doubt he goes free, though he may have committed the act for which he is being tried.⁸

In construing a contract, a court first endeavors to ascertain when and upon what subjects the minds of the contracting parties met. A person may have the mental capacity to enter into a simple agreement and not into a more complicated contract. The inquiry is always as to the particular thing.⁸

The object of every judge in construing a will is to ascertain the testator's real intentions—his mind upon the subject. To make a valid will the testator must have sufficient mental capacity to comprehend the nature of the act he is to perform. He must understand the extent of the property which he is disposing of, the relations which he sustains to those who have claims upon him, and be capable of making a rational selection among them. Less mind is ordinarily required to make a will than a contract. It is sufficient if he has such a mind and memory as to enable him to understand the elements of which a will is composed—the dispositions of his property in its simplest form. When it has been proved to a court that a testator was influenced by delusions, illusions and hallucinations at the time of making a will, then that will is invalid.

The neuropsychiatric medico-legal as-

pects of many claims for injuries and disability are numerous and important. Detection of malingering is often difficult. Braude's² chapter on simulation or malingering is excellent and in it are described many useful tests and special methods of examination. Gill³ cleverly discusses malingering in connection with the Selective Service Act. The question of bias on the part of physicians, especially in medico-legal matters is serious and one which provokes much criticism of the medical profession. Bias is exhaustively and ably considered by McCarty.⁴

The proof of insanity is an important part of court procedure. While medical experts are usually called upon to testify, the law does not recognize expert testimony as being of any greater value than that of ordinary persons. But if the testimony of expert physicians is properly given, it usually has great weight with the jury and the court.

Many mentally disordered persons are potentially dangerous. In some mental illnesses the danger is chiefly to the patient's self; in others, to other persons. The more mental deterioration, the less danger, as there is less initiative and emotional drive. It is in the mass of lesser crimes that the psychiatric examination is especially necessary, but it is in these cases that lawyers prefer a jail sentence for their clients to the chance of a long period of hospitalization. Oliver,⁵ of Baltimore, reports after a study of a large number of cases, that in not a single instance of an illegal act committed under emotional stress was the delinquent normal, bodily and mentally.

It seems curious that in insanity hearings, if a prospective juror possesses any special knowledge about mentally ill persons, he is out, but he would be allowed to testify as an expert.⁹ Negative evidence is not evidence at all in ordinary legal cases. But in insanity trials, it is not only admissible but determinative. Example: In an ordinary case two persons testify that they saw a pistol in Doe's hand and a hundred persons say they did not. The positive evidence of two positive witnesses outweighs

one hundred negatives. But if the pistol carrier's sanity is being questioned, two disinterested psychiatrists testify that he is mentally disordered and a group of interested and untrained lay witnesses say they do not think him insane, then the jury almost invariably brings in a verdict against findings of the trained observers. To the mind of the average layman it is not possible for a large group of persons to talk to a mentally disordered person and fail to detect his illness.⁹

Mental hygienists⁹ believe that: (1) punishment is not always a crime deterrent; (2) legal measures frequently aggravate rather than correct; (3) physical or mental factors may be the sole contributors in cases of delinquency; (4) any plan for the reduction of crime must contain a provision for the scientific study of individual offenders.

Physicians who appear in court as expert witnesses are apt to have a rough time of it if they are not thoroughly prepared and if they are unacquainted with their rights and privileges and unfamiliar with court procedure. Lawyers should depend on law rather than psychologic tactics and display to win their cases. When dealing with cases involving medical problems, lawyers need expert advice. There is no entirely satisfactory book which simplifies the theory and practice of medicine for lawyers or one which summarizes law for doctors. Even if there were such books, neither lawyers nor doctors would ordinarily possess the background in training and experience effectively to use such books without technical help.

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DISCUSSION

Dr. Edmund Connely (New Orleans): As Dr. May has indicated, the psychiatrist doing medico-legal work is concerned with a good many difficulties and finds it necessary to make a good many adjustments. Someone said that the last piece of constructive legislation in psychiatry was in 1845. I would not be responsible for that date; I do not know. Sometimes when you get in court you wonder if it was as late as that. There is no doubt the point of view and the type of case has to be treated in a different way from the psychiatric standpoint, not because psychiatry is different, but because the legal attitude in different cases varies—the criminal case in one manner, the civil case in another. The type of civil case varies. So while psychiatry is the same, or we think it is the same, the legal point of view is different, and the medico-legal expert must conform to the legal angle. We have to realize that there are many cases we ourselves would consider abnormal, which from a legal standpoint are not. The law has to draw the line somewhere and the law cannot split hairs in making decisions. They have to be positive decisions. So the medico-legal expert, especially the psychiatrist has to be careful to get as close to the line as possible without splitting hairs, and at times it is hard to do. It is hard for the legal man, judges, jury, to understand the psychiatric point of view. I do not suppose there is any field as little understood by laymen as psychiatry, and it is a little hard for the psychiatrist to adjust himself to the legal point of view. But there is no doubt we must do it if we are to be of value to the courts as experts. We all have to remember that our function is not strictly speaking as a witness. The doctor must state his mind. He must be witness and not jury or judge. I believe the medico-legal expert has to be all. He has to weigh the facts as he gets them and weigh them carefully and completely. I believe he has to understand and adjust them to the medico-legal angle, and as a witness has to present them to the court and jury in such a manner that they themselves can weigh and judge them from the medico-legal angle. He has to present them simply and in language the layman can understand, and he has to be able to substantiate his opinion by the facts and have the judge and jury see those facts from the proper psychiatric angle, and to be able to understand them from that angle, otherwise he will not get very far as an expert.

I think the average judge and the average lawyer expect the doctor to be biased, which is unfortunate, but is a fact that a great many do. As a matter of fact, I will always say that the expert witness should never be biased. He is there to assist the court, not as a partial witness, but a good many expect you when you are their witness to lean

towards their side. At the same time, it is not fair that the medico-legal expert should not be biased. He ought to present the facts as they are and interpret them to the best of his ability from the psychiatric standpoint. It is a little hard sometimes to do that, but some do. The ideal medico-legal expert will do that, and if he does not he soon loses the confidence of courts and judges.

I think we should never express an opinion that we cannot justify so the layman can understand it, and I believe we have to learn to adjust ourselves from the medico-legal standpoint to the various criminal and civil viewpoints.

Dr. T. A. Watters (New Orleans): I think medicine now is concerned with more than the individual. Organized medicine, The United States Public Health Service, the Mental Hygiene Movement, have taken medicine beyond the individual. On the other hand, I believe law is giving more consideration to the individual. The lawyer is fixed in a system of rules and doctrines under which he has to operate, nevertheless many lawyers are very competent students of human nature and recognize the limitations imposed upon them, when they apply the principles of law.

I believe the law student should have some psychiatry in his training, and I cannot help but entertain the hope that some day a unit will be installed at Charity Hospital that will make it possible for law students to have access to practical observation in psychiatry under medical supervision.

I looked up the word "insanity" and it is not a legal word. Rather it is a lay word that found its way into law. It comes from "sanus" and originally meant a sound body.

It is vitally important that we think in terms of "more of less," rather than in terms of "either, or." A patient is not sane or insane; there are too many factors to be considered and we must insist on this point of view. Such a point of view must be inculcated in the training of lawyers.

I cannot help but make some comments on the fact that we must consider these problems from the point of view of personality and personality changes, and get away from the obsession of nosology. There may be early changes which indicate paresis or a schizophrenic reaction, but if the case does not follow the classical descriptions in out-moded textbooks, it is very difficult to make this point with lawyers. One of the difficulties of psychiatry today is that we are still depending on textbooks written about formal "disease entities"; as a result we are still inclined to think of advanced disorders of personality function, of "disease." This is a product of medical teaching which has made "disease entity" a fetish.

Compulsions—I think at times physicians are inclined to take the meaning of compulsions as the legal profession sees it, which is the outgrowth of

too much emphasis on the concept of "irresistible impulse." In psychiatry, compulsions are associated with a disorder, in which the patient carries out the compulsion to relieve himself of certain ideas or tensions. The compulsion serves as a preventive or offsetting phenomenon. The compulsion is a symptom of a rather specific reaction that is fundamentally psychiatric, not legal. Dr. May's idea about encouraging a long-term study of the person under consideration is extremely important. Let me add just as much study of the culture in which he lives be made. There is a vast difference between a person in one culture and a person in another in so far as an illegal act, or a psychiatric disorder is concerned.

Dr. May covered the question of responsibility very nicely. I have looked up the original phraseology in the decision of the Chancellor in England, trying the McNaughton case which is the basis for the legal concept of responsibility in the United States today. These are the exact words given out in the House of Lords, on which the loss of responsibility and the law are superimposed: "To establish a defense on the ground of insanity, it must be clearly proved that, at the time of the committing of the act, the party accused was laboring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or, if he did, that he did not know he was doing what was wrong."

Dr. May brought up the question of the different fields in which psychiatry is associated with the law. I think he said: Crimes, contracts, wills, and compensation cases. We certainly have to do with contracts in regard to marriage; a great deal of work comes out of them directly and indirectly. Of course, we have a great deal to do with wills and a matter of wills is based on the "freedom of will" of the man making the will: A philosophic concept subject to considerable debate. Then the matter of claims and compensation cases brings up the question of malingering which is undefined at present. Many people believe there is no such thing, that the malingerer is inherently mean and a criminal. On the other hand there is a growing conviction on the part of many of us that malingering is a symptom-complex indicative of disordered personality. Some of us believe that practically all malingerers are psychopaths, psychoneurotics, or combinations thereof. So if we have psychopathic behavior, the type of behavior malingering shows, I am inclined to believe that we are dealing with a sick person and not a criminal per se.

Dr. May's remarks on expert testimony are important. The lawyer plays upon the impressibility and suggestibility of his jury. There is no doubt about it; he does everything to impress the court. He exercises a great deal of psychology at times, at other times plain acting. Sometimes he may be unscrupulous in his methods, yet these court room tactics of browbeating and mental magic are taught

and sanctioned for the sake of extracting "the truth" from the witness.

The mentally ill are dangerous, but not alone to others. We have to consider that the immediate danger is to himself, his reputation, his property, and to his family.

I think it was Dr. Oliver's comment that of "all patients studied, he found none who were not abnormal." Dr. Oliver is an extremely keen observer, has had a rich experience in court work, is an excellent psychiatrist, and is known for honest thinking.

Dr. May's comments on negative evidence are extremely important. One thing with which we psychiatrists have to face ourselves constantly is this: The average layman believes he has an inherent ability in sizing up and understanding other people. If you took 100 people off Canal Street very likely you would find a very high percentage of them thinking themselves clever and competent at reading character and personality. If someone has a disorder of the liver, they would not have that point of view, but everybody is an amateur psychiatrist. We must constantly recognize this fact.

The matter of punishment is important. I have visited Leavenworth and Alcatraz Prisons and know the wardens of these prisons personally. One cannot but be impressed with the educational department of Leavenworth. The wardens believe without question that education is the solution of crime; education with a social point of view about crime analogous to the way we look on mental disorder. We must drop our social, medical and legal biases, and face the matter of crime with honest thinking.

It is important for the psychiatrist to remember that he is not the judge. He must abide by the principles of court procedure. The court room is the domain of the lawyer; the operating room, the domain of the surgeon; the psychiatric unit the domain of the psychiatrist.

Physicians in court again must be familiar with the rules of court procedure and also familiar with the tactics of cross-examination. Every medical student would do well to read Wellborn's *The Art of Cross-Examination*. Lawyers can teach us a great deal and we might well afford to learn more for our own sake. They certainly can teach us something about suggestion.

I think that some comment should be made about our Courts at the present time. Many have deteriorated into vaudeville circuits. This is to be deplored. The solution, as I can see it, is a matter of giving our law students more understanding of psychiatry and our medical students more understanding of medical jurisprudence. A job which is one largely of reaching out through education.

Dr. L. Roland Young (Covington, La.): I think that we should bear in mind that criminal law can protect society and that is its purpose. I believe

there is such a thing as a malingerer. I believe we even see it in the psychoneurotic field. If you have lived under the same roof with this class of patients for about twenty years like I have where only about 10 per cent are psychotic, naturally I am not referring to the organic neurologic cases found, such as paresis and encephalitis. Yet, I realize the constitutional theory refuting that there is such a thing as a malingerer. Just here, about a year ago I was appointed on a lunacy commission with an experienced, competent doctor of New Orleans, Dr. George Roeling, to examine a patient who was definitely suspected of malingering insanity. As his feigning continued the talk in the little town of Franklinton began that he might be insane, for he was not eating, he was mumbling and beginning to look badly. The officer of the jail definitely over-heard him say that he was not going to Angola and he would play crazy. These folks can fool themselves and go too far and go insane.

We saw this man on two different occasions together and on a third occasion I saw him alone and did a spinal puncture.

The only physical defect he had was a unilateral chronic otitis media which proved to be the main basis for the defense.

After our testimony at the hearing I immediately went home and within two or three hours the District Attorney dropped by to tell me that the man had confessed even before he got back into the jail.

In the Fall of 1939 I visited Dr. Lowell S. Selling's Psychopathic Clinic as well as his traffic clinic of the Recorder's Court of Detroit. I am sure one way that we can help to protect society is the way that Dr. Selling is doing and this is largely prevention against the crime.

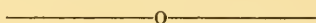
All misdemeanors and the like are brought before the recorder's court as you know. All second offenders are turned over to Selling with few exceptions, and sometimes first offenders, and are carefully checked by his clinical staff for physical and nervous or mental disorders, thereby often these would be felons are nipped in the bud.

Dr. C. S. Holbrook (New Orleans): I shall speak briefly on one subject and that is—the doctor as a witness. We unfortunately find ourselves in court often, and I know the young man, freshly out of college, goes to court with a great deal of hesitation, and all medical men go with much reluctance, to say the least. There are two ways in which a doctor can be called to court. One is as an ordinary witness, to tell only the facts of an accident or an injury, and that is all he needs to say. He should hold his testimony only to facts and he need not express an opinion as to the cause, the result, the length of time that one is going to be ill, or what the complications may be. The lawyers undoubtedly try to capitalize on the medical witness and try to get a lot of information into the record, which should not be. The ordinary witness should speak only of the facts he observes, and the facts as he

sees them, very much as a nurse, or an ordinary lay person might do, and he need not express his opinion. If the lawyer insists by one question or another to get an opinion, you can avoid that trick by asking if he wishes you to give testimony as an expert. Then you can ask the court to fix a fee. If the lawyer is willing to do that, it works out all right.

One should go into the court well versed with the subject, but the medical man should not be afraid to go on the witness stand if he will stick to the facts of the case, whether giving ordinary testimony or expert testimony. If the lawyer makes it disagreeable for you, or tries to be sharp, the judge will always stand by you if you appeal to him. I think we should not hesitate to go to court because we know so much more about our subject than the lawyer can possibly know. If we keep our head and do not get disturbed, hurried or annoyed we should get along very well.

Dr. C. P. May (In closing): It is always gratifying to have a paper provoke a lot of discussion. The only fault I have to find with the discussion is that no one said I had an excellent paper; this is the usual custom. But those who have discussed the paper have all been very kind and I thank them very much indeed. I wonder if it is really true, as Dr. Connely says, that judges and lawyers expect medical expert witnesses to be biased—I am a bit amazed to be told that.



THE USE OF THE VARIOUS INSULINS IN THE TREATMENT OF DIABETES MELLITUS*

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The purpose of this presentation is really not to discuss the treatment of diabetes mellitus in detail, but rather more to point out some of the important considerations and comparisons of the various insulins as they may relate to or affect treatment. By various insulins is meant: regular insulin, protamine zinc insulin and crystalline zinc insulin, all three of which are now quite commonly used. Some of the newer types will be mentioned because recent reports seem quite encouraging, although they have been available mostly for experimental work.

HISTORICAL OBSERVATIONS

It is often interesting to look back and see what the history of the treatment of a disease has been and this seems especially true for diabetes. We find that diabetic treatment has occurred in more or less definite periods or eras. For instance the period before the discovery of insulin is known as the pre-insulin era and is further divided into two periods. First from about 1900 to 1914 is known as the Nauyn era and although he probably did not contribute to the actual treatment of diabetes, he did show that the development of diabetes seemed to be associated with hereditary and obesity factors and therefore added to our knowledge for the prevention of diabetes. Then about 1914, Allen of this country following up the work of von Noorden, showed that the previously high fat diets were really harmful, in that they were prone to cause acidosis and coma. Allen therefore introduced and used the so-called high carbohydrate diet and showed that the good results that he obtained were due to the stimulation of endogenous insulin production. This work has been substantiated and accepted by many workers. From the discovery of insulin in 1921 until about 1937 is known as the Banting era or the golden diabetic period, for it has been during this span of years that our greatest advancement in treatment of diabetes has come. Hagedorn, of Denmark, in 1937 announced protamine insulin and Joslin speaks of the few years since as the Hagedorn era. The diabetic's diet has also changed by periods and we have had high fat diets, starvation diets and high carbohydrate diets. It would seem that at the present time, most internists prefer a relatively high carbohydrate diet although the tendency is to try to give the diabetic a diet similar to the normal individual. The diet question is not entirely settled, but protein may be given in the amount of 1 gram per kilo of body weight, carbohydrate about 150 to 200 grams and sufficient fat to bring up the caloric requirements.

CRITERIA FOR TREATMENT

Now the object of treatment of diabetes mellitus as we have been taught for a good

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

many years, has been to maintain the blood sugar within normal limits throughout the 24 hour period and prevent glycosuria. The normal range of the blood sugar may be taken as from 70 to 150 mg. It would seem that most of those interested in the treatment of diabetes have worked with these principles in mind and have been quite successful in a large percentage of their patients. When it is necessary to follow carefully the blood sugar level, this can be satisfactorily carried out by about four checks during the 24 hour period. These may be taken before each meal and bedtime. Of course if information regarding the height of hyperglycemia after meals is desired, postprandial blood sugar determinations will have to be done. A brief rise above the 150 mg. level at this time is without significance, even though a trace of glycosuria may occur. Satisfactory urine checks may be obtained by fractional urine specimens taken from breakfast until lunch, lunch to supper, supper to bedtime and from bedtime until morning. It is usually good practice to check the blood sugar from time to time and not rely entirely on urine examinations for control, because there are patients with high renal thresholds and then elderly arteriosclerotic patients are rather prone to hyperglycemia without glycosuria.

Usual methods which control mild diabetes, and fortunately a majority of diabetics come in this group, frequently fail when applied to the more severe forms of diabetes or the unstable diabetic. This unstable group is often difficult to handle even though they may be studied carefully and various means of control tried. Diabetics may be unstable because of various reasons. First, patients differ in their rate of reaction to insulin, some rapid and others delayed. While this group probably is not large, but when confronted with such people, they should be individualized and optimal distribution of carbohydrate worked out individually. At times patients will be found who tend to be inherently unstable, particularly children and adolescents. This instability is usually due to one of two reasons. First, insulin hypersensitiveness and

this does not mean allergic to insulin but exaggerated swings of the blood sugar curve in response to carbohydrate and insulin. Somogyi, of St. Louis, was the first to point this out and when he stated that, "hyperglycemia begets hypoglycemia" he meant that the delicate mechanisms that tend to correct hyperglycemia overshoot their mark and vice versa. Much can be done to smooth out the sugar curve and control this condition by correct interval feedings.

The second reason for inherently unstable diabetics is irregular variations from day to day in carbohydrate tolerance and insulin requirements. This type is difficult to control and there are several things that should be suspected in such patients: Surreptitious variations in food intake, errors in serving of the diet or variations in technic of insulin injections. It is important to understand that insulin must be injected beneath the skin and not into the skin if it is to absorb well. Massage of the region for a few seconds after the injection is of value. Joslin has called our attention to exercise as a factor at times, in causing patients to become unstable. He points out that delayed hypoglycemic reactions are apt to occur the day following the unusual exercise. These delayed reactions are more likely to be associated with the use of protamine zinc insulin and may be prevented by reducing the insulin 5 or 10 units. Better still is to increase the carbohydrates some before or during the exercise.

There may be a genuine variability to insulin needs for which no cause is apparent. Then there is the possibility that unstable patients may become stable by careful management. At times stabilization may be brought about by changing from regular insulin to a retarded insulin. Another procedure that at times may be successful in stabilizing a patient is reducing the diet from a high carbohydrate to low or moderately low carbohydrate. Therefore, given an unstable diabetic patient, all the foregoing factors and methods should be considered or kept in mind in attempting to stabilize him.

TREATMENT OF SEVERE DIABETES

This discussion so far has been mostly about the criteria satisfactory for treatment with regular insulin, but since the introduction of protamine zinc insulin, these criteria are not so easy to meet except in patients with mild diabetes. In the more severe diabetics, if we give one daily dose of protamine zinc insulin, sufficient to take care of the dietary loads, there is apt to be severe hypoglycemia during the postabsorptive or fasting periods (period between evening meal and following morning, breakfast). Tolstoi and Weber,¹ of New York and Cornell University, noticed a few years ago that although a large number of their patients had high blood sugars and large amounts of sugar in their urine, they seemed to do well and be more like normal people. Therefore these men decided to take a group of 84 of their ambulatory patients and watch them for a year, giving them one daily dose of protamine zinc insulin. They did not pay any attention to the amount of sugar in the blood and urine so long as they met certain criteria: (1) Maintenance of body weight; (2) absence of urine ketone bodies; (3) freedom from symptoms of diabetes. Tolstoi concluded that utilization and not the excretion of carbohydrates is of prime importance. The fact that the patient is doing well is evidence that he is using carbohydrate and this is the thing that makes him feel well. It had been thought up to this time that hyperglycemia and glycosuria made a patient more susceptible to infection but Tolstoi did not find any more infections in their group than non-diabetic groups. Also they claimed not to have found any more atherosclerosis in their patients than in others. Glycosuria protects patients from reactions and therefore is beneficial. Especially is this of importance in elderly patients with arteriosclerosis and subject to cardiac disturbances.

Many publications seem to substantiate the work of Tolstoi and his associates in principle but differ in the amount of hyperglycemia and glycosuria permissible. Recently Joslin² and his associates have chal-

lenged Tolstoi, stating that 42 years of experience in their own clinic have convinced them that methods designed to control hyperglycemia and glycosuria result in reduced incidence of coma and other complications of diabetes and an increased length of life of the average diabetic patient. Allen³ has also sided with Joslin in this argument, but it will no doubt require several years to determine if the Tolstoi method of treatment is correct. In the meantime until this controversy is settled, satisfactory control with protamine zinc insulin as already defined should probably be the goal in treating severe diabetes. It should also be kept in mind that there is evidence that hyperglycemia and glycosuria are not only compatible with good health but of benefit in preventing reactions. At the present time crystalline zinc insulin would seem to be the choice when it is necessary to use another insulin with protamine zinc insulin.

ACUTE DIABETES

Severe acute diabetes often requires a period of strict observation. By acute diabetes is meant diabetes that begins more or less acutely with the typical symptoms of diabetes as polyuria, excessive thirst, loss of weight and so on. The usual methods, as already stated, that control mild diabetes often fail when used for the more severe types. By mild diabetes is meant one that is controlled by total daily dosage of insulin up to 25 units. When it requires from 25 to 50 units of insulin daily, these patients may be classified as moderately severe and daily doses of 50 units or more of insulin are usually necessary for severe diabetes. Strict observation of these patients should include knowledge of home and business life, whether there is present any intercurrent infection or other complicating diseases, or nervous and mental stability. Protamine zinc insulin is admittedly technically more difficult to use than regular insulin and there does not seem to be any standard method for its use, still it would seem to be the choice, whether used alone or with other insulins. Martin⁴ and her

associates of Los Angeles, have been able to bring about satisfactory control in certain severe diabetes, in which all other methods have failed. She uses protamine zinc insulin to take care of what she calls the basal insulin requirements, which is the amount of insulin necessary to prevent postabsorptive or fasting hyperglycemia and glycosuria. Before each meal she uses regular insulin to prevent hyperglycemia, and glycosuria after meals. Martin and her associates claim the objections to the numerous insulin injections are outweighed by the satisfactory control obtained.

THE VARIOUS INSULINS

The properties and results of regular insulin are well known. Probably its most favorable feature is the quick action which makes its use valuable in emergencies as acidosis and coma. Regular insulin is usually preferable where the food intake varies from day to day as in infections, nausea and vomiting. The frequent injections and the variable results obtained with regular insulin are its main objections. Sustained effect of protamine zinc insulin and one daily dose are desirable features, the effect lasting from 16 to 24 hours instead of only a few hours. General reactions and local skin reactions are undesirable effects of protamine zinc insulin. The prolonged reactions of protamine zinc insulin are no doubt detrimental to certain tissues and many may be prevented by not attempting to use too large a dose. Instead of one large dose, an unmodified insulin may be used along with the protamine zinc insulin and a large part of the carbohydrate shifted to the latter part of the day and early night. Skin reactions are often due to faulty technic as already discussed. The slight prolongation of action of crystalline zinc insulin and purity are its advantages. However some workers consider the action of crystalline zinc insulin the same as for regular insulin.

According to extensive studies of Bailey and Marble⁵ of Boston, histone zinc insulin and globin (zinc) insulin are high-

ly satisfactory products. The action of histone zinc insulin resembles that of protamine zinc insulin but the effect is not quite so prolonged, while there is definite initial effect within two hours after injection. Not as many reactions occurred with histone zinc insulin but when they do occur, they are usually in the late afternoon. Globin (zinc) insulin action is a little less prolonged than histone zinc insulin action but the initial action usually begins within two hours after injection. Neither are reactions common with this product and late afternoon is the usual time of their occurrence.

At times the reactions may be about the same but more often the reactions of protamine zinc insulin differ from those of regular insulin. After treatment regular insulin reactions usually clear up while protamine zinc insulin reactions are likely to return and persist for several hours and require continuous treatment. Regular insulin reactions occur more often during the day while protamine zinc reactions are more prone to occur during the latter part of the night or early morning hours. Protamine zinc insulin reactions are rather vague; headache, nausea, malaise and numb sensations about the mouth. The reactions may come on during sleep, the patient awakening with sore muscles, evidence that he has had a convulsion. Regular insulin reactions are characterized by temporary hunger, tremor, nervousness and sweating. They are usually considered to be more violent but of shorter duration. Crystalline zinc insulin reactions are quite similar to those of regular insulin, while histone zinc insulin and globin (zinc) insulin reactions are more like those of protamine zinc insulin.

SUMMARY AND CONCLUSIONS

Protamine zinc insulin in one daily dose satisfactorily controls mild diabetes and is quite effective in most severe diabetes, either alone or in combination with an unmodified insulin, preferably crystalline zinc insulin. Unstable diabetes may be very difficult to control. Martin and her

associates have described a method which seems effectively to control certain severe diabetes after the usual methods have failed. No doubt protamine zinc insulin would be more universally used if the modifications in technic were better understood. There is evidence that in patients treated with protamine zinc insulin, hyperglycemia and glycosuria are not incompatible with good health and may be beneficial in that they prevent reactions. Even though recent reports of some of the newer insulins are encouraging, they probably should not be made available for general use at the present time, because of the danger of complicating the treatment of diabetes. It would seem that about two insulins should be on the market for general use, to simplify treatment, a rapid acting insulin and a slower and prolonged acting insulin.

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DISCUSSION

Dr. Edgar Hull (New Orleans): I am grateful for the opportunity of hearing Dr. Baskett's practical paper. What I would have said in discussion of it has been given by the essayist in his conclusions. I strongly believe that medical therapy in general, and the therapy of diabetes in particular, need to be simplified rather than increased in complexity. The average physician can certainly handle diabetes better if he can get along with two types of insulin than if he has to consider four or five types in the treatment of patients with diabetes. If it can be shown that there is no particular advantage in rigidly controlling glycosuria and hyperglycemia in patients with diabetes, and that patients remain in good health indefinitely if they are kept in a good state of nutrition and free from acidosis, many of the difficulties in the treatment of patients with severe diabetes will have disappeared.

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THE EDUCATION OF THE FUTURE
PHYSICIAN

When the draft regulations were revised to bring into the Army all men past the age of 18, it became obvious that higher education in this country would be virtually non-existent except in the instance of a few young men who are unable to pass the physical examination required before a man can enter the armed forces. There would probably be very few of such men who could not qualify, if not for full duty at least for limited duty. With the cessation

of collegiate training it became obvious that the supply of doctors, which both the Army and Navy have agreed must be forthcoming from the medical schools in a continuous stream, would be stopped. Measures would have to be taken to ensure a regular and steadily flowing group of young men into the armed services who could be used for replacements for the medical men who are killed in action or who have broken down physically. The civilian population has been drained by the Army and Navy of nearly all of the physicians it can stand without serious disruption of essential needs. There must be, of necessity, replacement also in the civilian doctors whose losses by retirement or by death are only slightly smaller than the yearly increment to the medical profession of the graduates of medical schools of this country.

In order to make provisions for the continuation of the young men in the study of medicine, it became necessary to devise a method whereby students could enter the premedical classes and could continue their education through the medical school. Such provisions have been made by the War Manpower Commission. The only group of men to be trained professionally or technically who will go under this rule are the prospective dentists and physicians, together with a few future veterinarians.

The plan calls for the induction of the young men into the Army. A group representing approximately 150,000 of these men will be selected at induction centers and elsewhere to continue specialized training. The engineers, physicists, chemists, meteorologists and a few others, who will be selected from this large group, will receive only relatively brief and highly specialized training. The doctors and dentists are the only groups that will be allowed to obtain a professional degree.

The men who will be selected for premedical course will be carefully chosen on the basis of their previous scholastic record, and their intelligence as judged by several intelligence and aptitude tests. The men will be allowed to signify that they wish to study for either one of the professions. The boy

just entering the premedical course will be in the Army or Navy and will have to live under Army or Navy regulations. The course that is arranged by the Army specialized training program is a difficult one. Work will be continuous without holidays. Approximately sixty hours a week must be devoted to the training of these men. A certain number of hours, five, will be devoted to military instruction and six hours a week to physical training. There will be five semesters and greatest stress will be placed on mathematics, physics, chemistry and biology. A few contact hours per week in the last three semesters will be allowed for certain selected courses such as psychology, history, public administration, physical chemistry and modern foreign languages. It is felt that five semester periods is too short a time to train adequately the embryo doctor. Most educators feel that six semester periods should be the minimum.

On the completion of premedical training, if the grades have been satisfactory and the work well done, the student is then assigned to one or another medical school, the selection being based on accessibility or nearness of the medical school to the place where the premedical training was taken, with the additional factor that too long a period should not elapse between the completion of the premedical training and the entrance into the medical school. An effort will be made to allow some choice of medical school by the student but it will not always be possible to accede to the wish to enter a specific institution. On the whole, most students probably will have to go to the medical school selected for them by the Army or Navy.

When the student enters the medical school he will not have to follow the curriculum outlined by the specialized collegiate training program, but will follow the curricula that are given in the medical schools; there will be no interference with the curricula of the different medical schools. While in a medical school a student will be a private detailed to that school for training just as privates are detailed to various training courses of a technical nature that

are now being conducted all over the country, from schools of baking to schools of radio technic. The medical students in the medical schools will finish their course in three years. There will be no vacations with the exception of possibly a few days between semesters. The students will be given the base pay of a private, their tuition will be paid, if the schools cannot provide living quarters and eating arrangements, they will be allowed \$2.50 a day for subsistence. They will be in uniform. They will have to live under military regulations and there will be a commanding officer over each of the units. They will be supplied clothing and a limited amount of technical equipment. Textbooks must be purchased by the individual student.

On completion of the medical school course the graduate will then be permitted to have one year of a rotating internship before entrance into the Army. In the instance of a very few individuals maybe they will be allowed to continue one more year as a resident. The boy who is selected to go into the medical school will certainly be in luck; he will not only have every expense paid for him by the Government but he will also obtain a salary. If he happens to be married the usual provisions for the care of the wife will apply to the medical student just as to any other soldier in the Army. All this will cost the Government a large amount of money, but it seems to be the only way that a limited number of students can go through medical training without being interrupted by military duties.

There has been some criticism of the plan, largely on the basis of the tremendous expense to the Government which would not be necessary were the future physicians segregated in some other way so they could continue their medical training. The Secretary of War has ordered all of the enlisted reserves into the Army. Consequently, the medical student cannot be carried as a reserve but must actually be in the Army, thereafter subject to the privileges and the duties of a soldier. As has been implied earlier, there are innumerable training

schools of various kinds for the enlisted personnel of the Army but the future doctor and future dentist are the only men in the Army who will have the good fortune of being trained broadly and who will be qualified at the completion of training to engage in their profession.

GROUPING LOCAL PRACTITIONERS

Sometime about a year ago an editorial appeared in the *Pennsylvania Medical Journal* written by one of the doctors of the state society. In this editorial it was suggested that there should be a grouping of local practitioners. The author* advanced many reasons why this could and should be done and he contended forcibly that there exists a challenge to organized medicine to advocate and work for clinic-centers.

Clinic-centers in small communities would be excellent in many respects, writes Dr. Raymond. They could enter the field of preventive medicine more actively than is now done by practitioners of medicine. In this particular field it would be possible to cooperate with the state and Federal health programs, preventive inoculations could be given, and periodic health examinations made for all age groups. In the realm of curative medicine there would be ample office space with possibly some of the men specializing in certain of the specialties. There could be emergency beds. The clinic-center could be used as a triage station for the sorting and selection of patients who would need hospitalization.

A uniform fee schedule could be provided for the advantage of the clientele of clinic-centers. There would be greater professional cooperation, hence increased public confidence.

For the profession there would be a preservation of the doctor-patient relationship; there would be a saving in expense; the overhead would be distinctly reduced. There would be a localization of medical activities of a smaller community in one place. The communities themselves would

take pleasure and pride in their health center.

The doctor presented his suggestions before the shortage of medical men became as acute as it now is in certain sections of the country, notably in the South where the profession contributed a very large number of its active members to the armed forces. The difficulties of practice are going to be greater and greater as the war continues. Might it not be that these clinic-centers might well be started now to make the lot of the medical man easier and to prepare as well a suitable place for the doctor in the armed services to return upon the completion of his services to his country.

THE TREATMENT OF ACUTE CHOLECYSTITIS

The treatment of acute cholecystitis has always been more or less of a controversial subject among medical men and surgeons. Even in the specialized group there are differences of opinion, as witness the discussion that occurred after the presentation of a paper by Zollinger and Cutler* at the time of the American Medical Association meeting last June. Some of the discussors believe that acute cholecystitis represented a surgical emergency, while others felt that it did not require an emergency operation. As a matter of fact, Behrend was quite definite in his statement that acute empyema of the gallbladder should not be operated on immediately.

The paper which provoked the discussion seems to be eminently a just and dispassionate discussion of acute cholecystitis. The two authors have more or less arbitrarily divided the patients who have acute inflammation of the gallbladder into three groups. The first group, which makes up the greatest number of patients, can be prepared for operation with rest, fluids and relief of pain in five or six days. Very often these individuals do not have more than minimal signs and symptoms, nevertheless they should be subjected to hospital care and be

*Raymond, Malcolm L.: Grouping local practitioners—another consistent challenger, editorial, *Pennsylvania M. J.*, 1942.

*Zollinger, Robert, and Cutler, E. C.: The treatment of acute cholecystitis, *J.A.M.A.*, 121:481, 1943.

prepared for an operation when properly hydrated and made ready for the surgical procedure. In this first group the response to conservative treatment is usually satisfactory, the temperature returning to normal, the leukocyte count diminishing, and the local tenderness being distinctly improved. On the other hand, with the second group the temperature, leukocyte count and physical findings do not show improvement but remain constant. It is not advisable in this second group to delay operation and as soon as the fluid balance has been adjusted, the surgical relief should be attempted within thirty-six to forty-eight hours. In the last group, a relatively small number of patients, the signs and symptoms show rapid progression and drainage of the gallbladder should be performed as soon as possible.

With most of the suggestions made by the surgical writers, most medical men will agree. The medical man, however, should be more emphatic than he usually is in regard to the preoperative preparation of the patient who has had or has an acute cholecystitis. The patient should be given adequate amounts of fluid, a relatively high

carbohydrate and protein diet, if he is not vomiting, in which case gastric suction should be employed and he should be given opiates if the pain is acute and severe, and heat should be applied to the abdomen. Then after a few days of this treatment the patient may be hospitalized and ready for the surgeon to operate in a day or so. However, if the medical man undertakes to prepare a patient in the home he should not forget that the patient should be under constant surveillance. The course of acute cholecystitis is never predictable and the patient may turn suddenly from improvement to a sharp exacerbation of the symptoms, he may be precipitated into the third group abruptly, with the necessity of immediate drainage of the gallbladder.

Under the regimen that has been followed by Zollinger and Cutler, the results have been excellent. Their mortality rate in a period of five years with 146 cases of acute cholecystitis was only 2.6 per cent. These authors incidentally conclude their paper with the statement which should be applied to every patient, namely that he be "treated as an individual surgical problem" or a medical one.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

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|-------|-----|---|---|
| March | 1. | Orleans Parish Medical Society,
Board of Directors, 8 p. m. | Women's Auxiliary, Orleans Parish
Medical Society, Orleans Club, 3
p. m. |
| March | 2. | Eye, Ear, Nose and Throat Staff,
8 p. m. | March 15. Hotel Dieu Staff, 8 p. m. |
| March | 3. | Clinico-pathologic Conference, Char-
ity Hospital Morgue Amphitheater,
1:30 p. m.
Clinico-pathologic Conference, Ma-
rine Hospital, 7:30 p. m.
Mercy Hospital Staff, 8 p. m. | Clinico-pathologic Conference,
Baptist Hospital, 8 p. m. |
| March | 4. | Clinico-pathologic Conference, Tou-
ro Infirmary, 11:15 a. m. to 12:
15 p. m.
Baptist Hospital, Executive Meet-
ing, 8 p. m. | March 16. Charity Hospital Medical Staff, 8
p. m. |
| March | 8. | Orleans Parish Medical Society,
Scientific Meeting, 8 p. m. | March 17. Clinico-pathologic Conference, Char-
ity Hospital Morgue Amphitheater,
1:30 p. m.
Clinico-pathologic Conference, Ma-
rine Hospital, 7:30 p. m.
Charity Hospital Surgical Staff, 8
p. m.
Clinico-pathologic Conference, Hotel
Dieu, 8:15 p. m. |
| March | 10. | Clinico-pathologic Conference, Char-
ity Hospital Morgue Amphitheater,
1:30 p. m.
Touro Infirmary Staff, 8 p. m. | March 18. Clinico-pathologic Conference, Tou-
ro Infirmary, 11:15 a. m. to 12:
15 p. m. |
| | | | March 19. I. C. R. R. Hospital Staff, 12:30
p. m. |

- March 23. Baptist Hospital Staff, 8 p. m.
 March 24. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
 French Hospital Staff, 8 p. m.
 New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.
 March 25. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
 March 26. L. S. U. Faculty Club, 8 p. m.
 March 31. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
 Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.

During the month of February the Society held one regular scientific meeting. The program was as follows:

Problems Associated with the Treatment and Management of Gonorrhea—Dr. Percy S. Pelouze, Associate Professor, University of Pennsylvania.
 War Production Board Orders M-30 and M-131—Dr. Philip H. Jones, Jr.
 Your Income Tax—Mr. Sidney Bourgeois.

Drs. Henry O. Colomb, C. S. Holbrook, Walter J. Otis and T. A. Watters attended the opening of

the Kittiwake Hospital at Pass Christian. Dr. Colomb has been appointed visting physician to the staff, and Dr. Holbrook has been appointed consultant to the staff.

Dr. H. Randolph Unsworth was recently installed as president of the New Orleans Neuro-psychiatric Club. Dr. Guy Odom was elected secretary-treasurer.

Dr. George Taquino was recently installed as president of the Hotel Dieu staff for 1943. Other officers installed were: Dr. Chaille Jamison, vice-president; Dr. Frank Chetta, secretary-treasurer; Dr. John S. Couret, Dr. Gilbert C. Anderson, Dr. Edmond Souchon, Dr. Edwin A. Socola, Dr. H. Theo. Simon. Dr. Lucy Scott Hill and Dr. C. J. Tripoli, additional members of the board.

Dr. George Battalora attended a joint meeting of the American Academy of Orthopedic Surgeons and the Clinical Orthopedics Society of America which met in Chicago, January 18.

Dr. P. Jorda Kahle presented a paper on Cytologic Changes in Carcinoma of the Human Prostate Gland following Treatment with Diethylstilbestrol Dipropionate before the Jefferson Davis Parish Medical Society January 21.

DANIEL J. MURPHY, M. D.,
 Secretary.

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LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

TO DISTRICT AND PARISH SOCIETY SECRETARIES

Again the Journal Committee appeals to the Secretaries of the District and Parish Societies to submit reports of the meetings to their official Journal. What is being done in the different Parishes and Districts of the State is of interest to many members in the State Society. Information can only be obtained through the Secretaries of the constituent organizations.

OUACHITA PARISH MEDICAL SOCIETY

The regular meeting of the Ouachita Parish Medical Society was held on Thursday, February

4, at eight o'clock, at the St. Frances Sanitarium, Monroe, Louisiana. An interesting case report was given by Dr. H. L. Flowers on phytobezoar. The bezoar was found in the terminal ileum and was composed of cocoanut shreds. This was discussed by Dr. J. Q. Graves and Dr. D. I. Hirsch.

Two motion pictures, Reduction of Intussusception, and Compound Depressed Fracture of Skull, were shown under the auspices of the Ouachita Parish Medical Society. There being no further business before the Society, the meeting was adjourned.

On Wednesday, February 3, 1943, Dr. Percy S. Pelouze lectured at the Monroe Charity Hospital,

Monroe, Louisiana, on Problems Associated with the Treatment and Management of Gonorrhea. A large number of the members attended.

Glenn T. Gallaspy, President.

G. A. Varrino, Secretary-Treasurer.

RAPIDES PARISH MEDICAL SOCIETY

The Rapides Parish Medical Society met in Alexandria on Monday night, February 1, 1943. Scientific papers were read by the following doctors from New Orleans:

"The Treatment of Urinary Infections," by Dr. Edgar Burns; "Preoperative and Postoperative Care of Surgical Patients," by Dr. Rawley Penick; and "Fluid and Electrolyte Requirements of Surgical Patients," by Dr. Samuel B. Nadler.

The Secretary-Treasurer of the Louisiana State Medical Society, Dr. P. T. Talbot, also attended the meeting.

LOUISIANA STATE UNIVERSITY SCHOOL OF MEDICINE

Because of the accelerated program which is in effect at the School of Medicine of Louisiana State University, the 1942-43 session will come to a close on March 6, 1943, three months earlier than the usual June closing. The present school year began on June 25, 1942.

The School of Medicine Commencement Exercises will take place in New Orleans on March 10, at the Municipal Auditorium. These will be the second medical school graduation exercises to be held in New Orleans under the accelerated program. Before the latter went into effect, the medical school seniors were graduated on the Baton Rouge campus at the regular University Commencement Exercises.

Franklyn Bliss Snyder, Ph.D., Litt.D., LL.D., L.H.D., President of Northwestern University, Chicago and Evanston, will be the Commencement Speaker.

Registration for the next school year will take place on March 11, 12, and 13. Classes will begin on Monday, March 15, and the year will end on December 17, 1943. Under the accelerated program a class will graduate every nine months.

The School of Medicine enrollment this year is 344, which is about the same as the enrollment for the past two years. Unlike that of most of the other schools and colleges in the university, the medical school enrollment has not showed a decrease on account of the war.

The Dean's office at the School of Medicine of Louisiana State University announces the appointment, effective February 1, 1943, of Paul S. Lavik, Ph.D., as full-time instructor in the Department of Biochemistry.

Dr. Lavik comes to the School of Medicine from the University of Wisconsin where he was a Research Assistant in Biochemistry. He was born in

Camrose, Alberta, Canada, of Norwegian descent, and has since become a citizen of the United States. He received his B.A. degree from St. Olaf College, Northfield, Minnesota, in 1937; his M.S. from the University of Wisconsin in 1941; and his Ph.D. this year from the same university. His field of research was biochemistry and organic chemistry. He is a member of the Blue Key National Honorary Fraternity and of the Gamma Alpha Graduate Scientific Fraternity.

Dr. Lavik is the author of a number of papers in the field of biochemistry. His publications include Dietary Fat and Tumor Formation, The Effect of Certain Carcinogens on Vitamin A in the Liver, and Some Additive Effects of Carcinogenic Hydrocarbons.

Dr. Hubert Randolph Unsworth, Clinical Assistant Professor of Neuro-Psychiatry at the Louisiana State University School of Medicine, was elected President of the New Orleans Society of Neurology and Psychiatry at the last meeting of the Society, which was held on January 21, in New Orleans. Dr. Guy Odom, Instructor in Surgery at the School of Medicine, was elected Secretary-Treasurer of the Society at the same meeting.

Dr. George C. Battalora, Clinical Assistant Professor of Orthopedics of Louisiana State University School of Medicine, attended the joint meeting of the American Academy of Orthopedic Surgeons and the Clinical Orthopedics Society of America which met in Chicago on January 18.

Dr. George W. McCoy, Director of the Department of Public Health at the Louisiana State University School of Medicine, is in New York attending the annual meeting of the National Foundation for Infantile Paralysis. The meeting began on January 23, 1943.

Dr. E. L. Burns, of the Department of Pathology of the Louisiana State University School of Medicine, and Dr. P. Jorda Kahle, Director of the Department of Urology, jointly presented a paper before the Jefferson Davis Parish Medical Society on January 21, 1943, at 8:00 p. m. Their subject was Cytologic Changes in Carcinoma of the Human Prostate Gland Following Treatment with Diethylstilbestrol Dipropionate.

AMERICAN FOUNDATION FOR TROPICAL MEDICINE

At a recent annual meeting of this organization, Dr. H. W. Kostmayer, Dean of the School of Medicine of Tulane University, was elected as one of the Board of Directors.

The Directors also elected a Medical Committee of six, on which committee was placed Dr. Ernest Carroll Faust, Acting Head of the Department of Tropical Medicine of Tulane University, and Col-

onel Charles F. Craig, former Professor of Tropical Medicine of Tulane.

Lt. Commander Maxwell E. Lapham was one of the eight men elected to membership in the Foundation.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

President J. De J. Pemberton has taken a poll of the members of the Executive Council of the American Association for the Study of Goiter, and it is the unanimous opinion of the Executive Council that all meetings of the Association be postponed for the duration of the war. It is also the opinion of the Council that nothing would be gained by having a meeting of the Executive Council at this time. It was further agreed that all of the present officers shall hold their positions until the next meeting of the Association. It is the desire of the president that the membership be acquainted with the above facts.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The general oral and pathological examinations (Part II) for all candidates will be conducted at Pittsburgh, Pennsylvania, by the entire Board from Wednesday, May 19, through Tuesday, May 25, 1943. The Hotel Schenley in Pittsburgh will be the headquarters for the Board, and formal notice of the exact time of each candidate's examination will be sent him several weeks in advance of the examination dates. Hotel reservations may be made by writing direct to the Hotel.

Candidates for reexamination in Part II must make written application to the Secretary's Office not later than April 15, 1943.

The Pittsburgh Obstetrical and Gynecological Society will hold a subscription dinner meeting at the Hotel Schenley, on Saturday evening, May 22, 1943, at 7:00 p. m. Visitors, here for the examination, are cordially invited to make arrangements to attend. Reservations may be made by writing to Dr. Joseph A. Hepp, Secretary of the Society, at 121 University Place, Pittsburgh, Penna. An interesting program is being provided.

The Office of the Surgeon-General (U. S. Army) has issued instructions that men in Service, eligible for Board Examinations, be encouraged to apply and that they may request orders to Detached Duty for the purpose of taking these examinations whenever possible.

Candidates in Military or Naval Service are requested to keep the Secretary's Office informed of any change in address.

Deferment without time penalty under a waiver of our published regulations applying to civilian candidates, will be granted if a candidate in Service finds it impossible to proceed with the examinations of the Board. Applications are now being received for the 1944 examinations. For further informa-

tion and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

AMERICAN FEDERATION FOR CLINICAL RESEARCH

The first meeting of the New Orleans section of the American Federation for Clinical Research was held February 17 in room 410, of the Louisiana State University Medical Center. The following program was presented: "Serial Bone Marrow Studies at Various Sites in Blood Dyscrasias" by Dr. Philip Pizzolata of L. S. U.; "The Renal Concentration Test Using Posterior Pituitary Extract" by Dr. Hugo Engelhardt, of Tulane; "The Role of Congestive Heart Failure in the Production of the Edema of Acute Glomerular Nephritis" by Dr. John S. LaDue of L. S. U.

Future meetings of this organization will be held every two months. These meetings are open to all who may be interested. The papers are limited to strictly ten minutes and the total discussion is limited to twenty minutes. Members, associates and guests may participate in the discussion; each discussor is limited to five minutes.

The officers of the organization are: Dr. Hugo T. Engelhardt, president; Dr. G. R. Meneely, secretary-treasurer; Dr. Travis Winsor, program chairman.

SCHEDULE FOR TWENTY WAR SESSIONS ANNOUNCED BY AMERICAN COLLEGE OF SURGEONS

New developments in military and civilian medical and hospital service will be brought to members of the medical profession at large, and hospital representatives, through a series of twenty War sessions, beginning March 1, to be held throughout the United States under the sponsorship of the American College of Surgeons with the cooperation of other medical organizations and of the Federal medical services.

Each War Session will consist of an all-day program, lasting from 9:00 o'clock a. m. to 10:00 p. m., including luncheon and dinner conferences. There will be eight meetings in each session, four of which will be for the entire assembly, and the remainder divided into two meetings each for physicians and for hospital representatives. Subjects will be similar in the different places but some of the speakers will be changed in the different states and service commands. Nationally known representatives of the United States Army, the United States Navy, the United States Office of Civilian Defense, the United States Procurement and Assignment Service, and the United States Public Health Service, will address the meetings and will lead discussions, in addition to participation by prominent leaders in civilian medical practice and hospital service.

Topics to be discussed relating to military medicine will include care of the ill and injured in com-

bat zones and after evacuation. The newer types of injuries encountered in this war, such as crush and blast injuries, will be especially considered, together with prevention and treatment of infections, and treatment of burns, shock, and injuries of specific parts of the body. Anesthesia, plastic surgery, and the psychoneuroses of war, will be some of the other topics. Problems of civilian medical care in wartime which will be discussed will include the responsibilities of individual doctors and hospitals; personnel problems of hospitals; organization of emergency medical services; maintaining adequate supplies, furnishings, and equipment; maintenance of high standards of medical and nursing education, and of hospital service in general; hospital public relations; and administrative adjustments in professional staffs of hospitals. The opening meeting of each session will be devoted to discussion of "Medical and Surgical Aspects of Chemical Warfare," led by a representative of the United States Office of Civilian Defense, and the closing meeting will be a panel discussion on problems in wartime civilian medical practice to be led by representatives of the United States Public Health Service, the American College of Physicians, the American Medical Association, medical services in industry, and the American College of Surgeons. Some of the topics for consideration at this meeting will be endemic and epidemic diseases, including tropical diseases; medical services in industry; medical and surgical practice; and supplementary postgraduate education for medical officers and civilian doctors.

Dr. Irvin Abell, Chairman of the Board of Regents of the College, in announcing the War Sessions, said that although participating states and provinces for each meeting have been designated to facilitate arrangements, there will be no geographic restriction on attendance, and those who plan to attend may select the place and time which are most convenient.

The American College of Surgeons cancelled its 1942 national meeting and is holding in abeyance plans for a Clinical Congress in 1943, in the meantime offering the regional meeting plan provided by the War Sessions to save the time of the doctors and other personnel, and to minimize transport difficulties, without sacrificing unduly during wartime the educational and stimulative benefits of medical assemblies.

For Texas and Louisiana, the meeting will be held Monday, March 29, at Houston, Texas, with headquarters in the Rice Hotel. For the States of Tennessee, Arkansas, and Mississippi, the meeting will be on Friday, March 26, at Memphis, Tennessee, at the Peabody Hotel.

NEWS ITEMS

Dr. and Mrs. James Q. Graves announce the marriage of their daughter Jeanne to Alexander Boatner Myatt, junior, Ensign, United States Na-

val Reserve, on the fourteenth of February, at Monroe.

Dr. and Mrs. Frederick Arthur Willius, of Rochester, Minnesota, announce the marriage of their daughter, Jane Eleanor, to Dr. Rudolph Matas Landry on February 27.

The following United States Public Health Officers have been ordered to New Orleans: P. A. Surgeon Walter J. Reilly; Asst. Surgeon Albert H. Williams; P. A. Surgeon Benjamin L. Newell; Asst. Surgeon Robert D. Furlong; Asst. Surgeon James W. Todd; and Asst. Surgeon M. A. Troncelliti. P. A. Surgeon C. T. Bowen has been relieved from duty in New Orleans and sent to Ocala, Florida, and Asst. Surgeon C. N. Fiore has been ordered to Port Arthur, Texas.

Election of B. Thurber Guild, M. D., member of the staff of the Massachusetts General Hospital, Boston, as president of Fairchild Brothers and Foster, a subsidiary of Winthrop Chemical Company, was announced yesterday (Tuesday) by Dr. Theodore G. Klumpp, president of the parent company.

TOURO INFIRMARY

The regular monthly meeting of the staff of Touro Infirmary was held on the evening of February 10 at 8 p. m. The first order of scientific business was a clinico-pathologic conference with Dr. Sam Nadler leading the discussion of a former patient whose organs were presented by the pathology department.

There were two case reports, one by Dr. Sidney Copland, who discussed fracture of the shaft of the femur which had been grafted with bone. Dr. Meyer Teitelbaum gave a most interesting presentation of the x-ray diagnosis of lesions of the large bowel.

SOUTHERN BAPTIST HOSPITAL

The regular monthly meeting of the Clinical Staff of Baptist Hospital was held Tuesday, February 23 in the Chapel of the Hospital. Dr. Waldemar Metz presented a series of interesting plastic cases which were most instructive.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week ending January 16 there was reported in the City of New Orleans 186 deaths as compared with 108 the previous week. Of these deaths, 118 were in the white population and 68 in the negro. There were 19 deaths in children under one year of age, divided 10 white and nine negro. There was a rather sharp reduction in the number of deaths in the city for the week ending January 23 as contrasted with the previous week. The 168 deaths that occurred this

week were apportioned 89 white, 78 negro with 18 infant deaths, 14 of which were in the negro race.

The weekly morbidity index for the week of January 30 was lost from some cause or another as it was never received in the office of the Journal.

The week ending February 6 showed 157 New Orleanians dying, 97 of whom were in the white race and 16 in the negro. There was a sharp drop in the week which ended February 13, as only 128 deaths were listed, 86 of whom were white people and 42 were in the colored population. This week there were only 11 infant deaths, nine taking place in the white and only two in the negro race.

INFECTIOUS DISEASES IN LOUISIANA

For the week ending January 16, the Louisiana State Department of Health in their weekly morbidity report listed 453 cases of syphilis, 163 of gonorrhea, 33 of mumps, 26 of measles, 24 of pulmonary tuberculosis, 14 of scarlet fever, and 11 of chickenpox. No other diseases occurred in numbers greater than 10 during this particular week. Most of the patients with gonorrhea were reported from army camps, as were 21 of the 26 cases of measles. Of the unusual diseases a patient was found with typhus fever in Jefferson Davis Parish. For the week which ended January 23, while syphilis as customary led the list of reportable diseases with 447 cases, followed by gonorrhea with 262, it is interesting to note that some of the contagious diseases of childhood were quite prevalent. For example there were 58 cases of mumps, measles 57, with chickenpox 13. Also there were listed 41 cases of pulmonary tuberculosis and 12 of lobar pneumonia. Three cases of undulant fever, 11 cases of meningococcus meningitis with nine cases from military sources were also listed. There were five cases of typhus fever found this week. For the following week which terminated January 30, there were recorded 493 cases of syphilis, 225 of gonorrhea, 68 of measles, 61 of mumps, 34 of chancroid, 15 of chickenpox, 12 of lymphogranuloma venereum, 11 of pulmonary tuberculosis, and 10 of whooping cough. One case of poliomyelitis was reported from Calcasieu Parish, six cases of meningococcus meningitis were reported from Rapides Parish and from military sources. Most of the cases of measles came from the army, as did the mumps. As measles is quite prevalent at the present time and 62 cases were found in the army camps, with only 68 being reported for the whole state, it is quite obvious that many of these cases are not being reported. The week ending February 6 found an appreciable reduction in all the reportable diseases except pulmonary tuberculosis of which 75 were listed this week. Other diseases occurring in numbers greater than 10 include 181 cases of syphilis, 94 of gonorrhea, 35 of mumps, 34 of measles, 16 of scarlet fever, and 13 each of malaria, influenza, and chancroid. Only two cases

of meningococcus meningitis were reported this week, both listed as being out of the state. There is no other unusual disease listed.

CORRESPONDENCE

1913 ½ Jackson Ave.
New Orleans, La.
July 1, 1942

I wish to announce the establishment of the Colored Trained Practical Nurse's Register. I wish to inform you of the fact, that these nurses have two years and six months Hospital Training. They are willing to render their service when needed. You may contact them by calling Canal 2439.

Very truly yours,

Mrs. A. E. Wilson (RN)

DR. FRANK P. PERRET

(1904-1943)

Dr. Frank Placide Perret, Jeanerette, was born in 1904. He graduated from Tulane University, School of Medicine, in 1928. He began the practice of medicine in Pineville, La., moving to Jeanerette in 1932. He has been a member of the Louisiana State Medical Society since his graduation. He died on January 10, 1943.

In the obituary notice the following tribute was paid to this prominent physician:

The dominant outstanding features of Dr. Perret's life were his sterling character and charming personality. His life was an inspiration to all, an incentive to manhood and a comfort to old age. His presence radiated a spirit of good cheer and encouragement to the maimed and suffering. His individuality lent rays of sunshine when the dark clouds of adversity and death hovered near. He was a prince of good fellows and one of God's noblemen. He knew life and how it should be followed.

He was true to his faith, loyal to his friends, but when the finger of sorrow beckoned he knew no color, nor creed, bigot and liberal minded were accorded the same tender care and skill. As a physician he was measured as one of God's messengers. As a man, he will live in memory as a true disciple of the doctrine, "Do unto others as you would have them do unto you."

To know the man was to love him. We mourn his loss greatly, but feel richer in the possession of the knowledge that mankind profited by his being.

He lived his life not for himself alone, and yet at the balance must be set down as one who loved his fellowman. He loved his neighbor as himself. He was the friend of man.

WOMAN'S AUXILIARY

Mrs. Clarence B. Erickson, State President of the Auxiliary, asks that an important announcement be made at this time.

Due to war-imposed conditions the usual conventions of the State Medical Society and its Auxiliary will not be held. Instead, the Medical Society at present plans to have a session of the House of Delegates on the morning of May 3, in Baton Rouge, to be followed in the evening of the same day by the address of the President and the annual oration.

The Board of the Auxiliary will meet in the morning and probably in the afternoon of May 3, with any Auxiliary members who are not on the Board welcome to attend. In the evening the Auxiliary will be invited to hear the addresses of the President and guest speaker of the Medical Society.

More details of the plan will be given in the April Journal.

This month we have an account of the activities of the Rapides Parish Auxiliary. The President, Mrs. O. B. Owen, writes that they are having a full program with celebration of Doctors' Day, promotion of Hygeia and War Service their major projects. The Doctors on Their Day, will be given a chicken barbecue (no rationing of chicken, you know) on the lawn of the home of Dr. and Mrs. Owens. The Auxiliary has gotten subscriptions to Hygeia in all public and private schools in Alexandria, and they have given subscriptions to two U. S. O. clubs here.

An auxiliary member is general chairman of surgical dressings for the Red Cross, and members have given more than three hundred hours

of service to various phases of Red Cross work. They serve once a month as hostesses in the U. S. O. club. In December they gave a party for Service men, using their own sugar and coffee, a real mark of patriotism. In a recent drive for War Bonds the Auxiliary raised approximately \$15,000.

Let us all salute Rapides. That is indeed a list of worthwhile accomplishments.

Mrs. A. G. McHenry of Monroe, probably our most faithful reporter for Auxiliary News, sends an account of the February meeting of her group. Following a lovely luncheon in the Butterfly Room of the Frances Hotel, a business meeting was held with Mrs. R. W. O'Donnell, president, presiding. Plans were outlined for the entertainment of civilian doctors and medical officers of the A. A. F. Navigation School on Doctors' Day. Mrs. A. R. Tisdale gave a report of the recent meeting of the State Board. Mrs. D. T. Milam read an article on Women Defense Workers of Cuba. A book review by Mrs. Clifford Johnson was followed by election of officers with the following named: President-Elect, Mrs. A. B. Gregory; First Vice-President, Mrs. F. C. Bennett; Second Vice-President, Mrs. D. M. Moore; Recording Secretary, Mrs. H. V. Collins; Corresponding Secretary, Mrs. I. J. Wolff; Treasurer, Mrs. A. D. Tisdale; Publicity Secretary, Mrs. W. L. Bendel; Historian, Mrs. J. E. Walsworth.

After reading these two interesting accounts, will some of you presidents from whom we have had no news this year, send me some material for next month's News? I have written several of you but have had no response and we want to hear from all of you. Thank you.

Mrs. James W. Warren, Chairman,
Press and Publicity.

 BOOK REVIEWS

Electrotherapy and Light Therapy with the Essentials of Hydrotherapy and Mechanotherapy: By Richard Kovács, M.D. 4th ed. Philadelphia, Lea & Febiger, 1942. Pp. 735, illus. Price, \$8.00.

In view of the remarkable progress that has been made in the field of physical therapy in the last few years this fourth edition represents a successful attempt to bring this work up to date. It is especially timely during this period when physical therapy should play a large part in the relief of disability and suffering experienced on the many fronts of the present conflict.

This book is divided into five parts or 38 chapters. Part I is devoted to electrophysics and contains discussions of the generation, conversion and distribution of electricity. Part II, dealing with electrotherapy and electrodiagnosis, is concerned with the various types of apparatus, the technics,

the physiologic effects, the dangers and the indications and limitations of the many forms of electrotherapy. The chapters on electrodiagnosis contain valuable new information regarding electrophysiology as well as rather detailed discussions of the apparatus and technics of the examinations.

Light therapy is considered in Part III. The physics of radiant energy, infra-red and ultraviolet radiation, heliotherapy and artificial ultraviolet therapy are contained in the chapters of this part. Part IV contains three new chapters on the employment of water, massage and exercise.

Part V represents the clinical application of the types of physical therapy discussed in the first four sections and is devoted to the employment of these agents in the therapy of the diseases of the various systems and organs. The discussions of the organization and conduct of physical therapy

in office and institutional practice are valuable additions to this volume.

The text is well written and the illustrations are excellent. A list of references following each chapter and a complete index make this book a valuable work for those interested in the modern application of physical therapy.

J. N. ANÉ, M.D.

Endocrinology, Clinical Application and Treatment: By August A. Werner, M.D., F.A.C.P. 2d thoroughly rev. Philadelphia, Lea & Febiger, 1942. Pp. 924. Illus. pl. Price, \$10.00.

This volume is a thorough, amply illustrated treatise on all that falls into the realm of endocrinology. Besides being a reference to physicians in general it will serve as a supplement to every specialist's library for the author has left no branch of medicine devoid of endocrine relationship. The student will find this book a useful guide to a clearer understanding of endocrinopathology.

Its extensiveness is manifest by the well concentrated 924 pages which are grouped under 23 chapters. Besides the individual sections devoted to each endocrine gland there are coordinated treatises on the autonomic nervous system, calorimetry, the hormones, sterility, lactation, obesity, defective osseous metabolism, cutaneous, hair and tooth manifestations. If one gives sufficient study to this excellent work, and it is well worth the time, a knowledge of endocrinology is obtained. Casual reading, and the presentation is interestingly readable, will impress one with the valuable diagnostic information obtainable from the endocrine system. The survey of each endocrine defect, illustrated and with exemplary case report, is projected in such a manner that comparative diagnosis is made with ease. The reviewer, however, questions the author's statement in the preface, "as a result of our present knowledge of the functions of the ductless glands, the terms: neurasthenia, hypochondria, and nervous breakdown are becoming obsolete." Endocrinology can hardly replace neuropsychiatry. An adequate endocrine knowledge, however, will increase diagnostic acumen, prevent such erroneous diagnosis, and greatly aid the general practitioner as well as the specialist.

The fact that this is a second edition is evidence enough of the success of the original publication and is in itself a compliment to the author and his work. The reviewer is well impressed on the whole with the mode and completeness of presentation which reveals the advancement of endocrinology to an exact science with an ever increasing position of importance in the field of medicine.

GORDON MCHARDY, M.D.

Philadelphia, W. B. Saunders, 1942. Pp. 243. Illus. Price, \$3.00.

This is the third volume in a series of military surgical manuals prepared under the auspices of the Division of Medical Sciences of the National Research Council. The text is divided into two parts, the first on abdominal injuries and the second on genito-urinary injuries.

The section on abdominal injuries, prepared by Ambrose H. Storck, whose authoritative experiences on this subject have been widely published, comprises eleven chapters. The first few chapters are devoted to general considerations of abdominal wounds in modern warfare, incidence and classification of the various kinds of wounds and their mechanism of productions, factors influencing mortality and possible method of controlling them, estimation of the extent of injury based upon various procedures of examination, the general pre-operative care of the patient, and factors determining operability. One chapter deals with the type and selection of anesthesia, and one to a description of operative procedures applicable to various injuries. The remaining chapters are concerned with wounds of structures and organs including the abdomino-thoracic type, postoperative treatment, complications, and mortality statistics. The subject matter is presented in a succinct, explicit and pleasantly readable manner. The illustrations which are of the simple line drawing type are profuse and informative. Unfortunately some of the drawings are not properly credited to their original source, even in the list of references following each chapter, slightly marring an otherwise excellently produced, carefully edited, and authoritatively written text.

The section on genito-urinary injuries consists of six chapters, each of which is written by an eminent urologist. The first is devoted to a consideration of diagnostic factors of war injuries of the genito-urinary tract in general, and the other to injuries of special organs in this field with brief discussions of their management. The last chapter entitled "Do's and Don't's," is a pithy rule-like statement of procedures which should and should not be done in the handling of these patients. The numerous illustrations are mostly tone drawings excellently reproduced with a lucid distinctive style.

This timely manual will be of immense value not only to military surgeons but also to those interested in traumatic surgery. The Division of Medical Sciences and its Committee on Surgery of the National Research Council deserves sincere commendation for their unstinted efforts in the production of these excellent war manuals.

MICHAEL DEBAKEY, M.D.

Abdominal and Genito-Urinary Injuries; Military Surgical Manuals, National Research Council.

Central Autonomic Regulations in Health and Disease: By Heymen R. Miller, M. D.; with an introduction by John F. Fulton, M. D. New

York, Grune & Stratton, 1942. Pp. 430. Price, \$5.50.

This monograph deals particularly with the central autonomic controls and their relation to clinical medicine. It is a successful attempt to bring to the attention of clinicians the physiologic concept of central integration of autonomic mechanisms and the significance of overlapping representation of somatic and automatic levels of function. This concept, as Dr. Fulton points out, has been slow to find recognition and application in clinical medicine. The first ten chapters deal with the general physiology of the autonomic nervous system, the autonomic regulation of body temperature, water and minerals, metabolism, circulation, respiration, the alimentary tract, the genito-urinary and reproductive systems, and sleep. These are followed by short chapters on the central mechanisms of emotion and the response of the autonomic nervous system to pharmacodynamic substances. Throughout these discussions, particular emphasis is placed on the role of the hypothalamus as the principal subcortical level of autonomic function. The author has departed from the usual order in placing the discussion of the anatomy of the peripheral autonomic system and of the hypothalamus in the last three chapters at the end of the book. All of the chapters are unusually well documented with extensive bibliographies.

As a clinician writing for his colleagues, the author presents clinical evidence, wherever possible, to show that many patterns of clinical disease are partially or wholly expressions of autonomic activity and that this activity may or may not be associated with somatic alteration. Particularly interesting are the detailed observations of Professor P. Anohkin of an unusual case of coescent twin presented in connection with excellent discussions of sleep and central emotional control.

H. S. MAYERSON, M. D.

Human Pathology: By Howard T. Karsner, M. D. Philadelphia, J. B. Lippincott Company, 1942. 6th ed. rev. and reset. Pp. 817. Price, \$10.00.

In this revised edition of *Human Pathology*, the author has attempted to retain those facts which in the light of more recent experimental and clinical evidence are still found to be pertinent to the disease processes to which they refer. The discussion of other subjects has been revised in the light of the newer knowledge, without appreciably

lengthening the articles. The author has made no attempt to present an exhaustive analysis of the literature, but has a concise manner of presenting an adequate description of the disease processes, and has supplemented this with an adequate bibliography.

Descriptive paragraphs are adequately supplemented by illustrations, for the most part black and white, including many microphotographs. In addition to these black and whites, there are numerous color plates more vividly portraying the subject being discussed.

This text adequately covers the subjects of general pathology and should prove to be an adjunct to the library and to serve as an adequate reference book for students and for others interested in gaining a good basic knowledge of any one of the subjects discussed.

ALFRED B. LONGACRE, M. D.

PUBLICATIONS RECEIVED

W. B. Saunders Company, Philadelphia and London: *The Anatomy of the Nervous System*, by Stephen Walter Ranson, M. D., Ph. D. *Orthopedic subjects, Military Surgical Manuals*, prepared and Edited by the Subcommittee on Orthopedic Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. *A Textbook of Clinical Neurology with an introduction to the History of Neurology*, by Israel S. Wechsler, M. D. *Psychosomatic Medicine*, by Edward Weiss, M. D. and O. Spurgeon English, M. D. Charles C. Thomas, Springfield, Illinois: *Food-Allergy*, by Arthur F. Coca, M. D. *Renal Lithiasis*, by Charles C. Higgins, M. D.

J. B. Lippincott Company, Philadelphia, Montreal and London: *Essentials of Gynecology*, by Williard R. Cooke, M. D., F. A. C. S.

Paul B. Hoeber, Inc., New York and London: *Treatment of Fractures*, by Guy A. Caldwell, M. D., F. A. C. S.

Grune & Stratton, New York: *Atlas of Ovarian Tumors*, by Gemma Barzilai, M. D.

National Society for Crippled Children of the U. S. of America, Inc., Elyria, Ohio: *A Primer on The Prevention of Deformity in Childhood*, by Richard Beverly Raney, B. A., M. D. in collaboration with Alfred Rives Shands, Jr., B. A., M. D.

Harvest House, New York: *The Sight Saver*, by C. J. Gerling.

Lea & Febiger, Philadelphia, Pa.: *Diseases of the Skin*, by Oliver S. Ormsby, M. D. and Hamilton Montgomery, M. D., M. S.

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THE ANNUAL MEETING

The Louisiana State Medical Society was organized in 1878 by a group of the outstanding doctors of Louisiana, men who were broad in vision and definite in action. Many of these men were active in fighting and contending against the horrors of the carpetbagging days. These men knew and realized an organized profession would be able to accomplish much for the good of the populace as well as strengthen the medical profession itself. Since the days of the organization of the State Society, there have been held almost yearly meetings at which the business of the Society was conducted by the House of Delegates and at which scientific papers were presented for the edification and instruction of the membership. These meetings have occurred for the most part regularly and without interruption. At times cataclysms of nature, as mentioned in the minutes, caused meetings to be called off on account of crevasses. These occurred in 1882, 1890, and 1897. In recent years, 1920 and 1932, the American Medical Association met in New Orleans and there were no scientific meetings of the State Society. In 1933, at the height of the depression, again the scientific meeting was deleted, although the business meeting was held.

Now our country is engaged in a great war, a war so extensive, so widespread and so appalling that it is beyond the concept of most men. All the energies of the nation should be directed towards the winning of this war to enable us to live as free men in a democratic state. The officers of the organization felt that a meeting, other than solely for the purpose of transacting business, should be done away with in this, the second year of the global war. The officers know that more than 300 of our members are serving under the flag of their country and they know that the remaining Louisiana doctors have had to take over the work of those who have gone. To these burdens has been added an influx of workers in war industry who have swelled materially the population of some Louisiana cities and the state as a whole. For these reasons they deem it advisable to do nothing more than meet, conduct the necessary business and adjourn.

Many of the members of the Society will miss the annual convocation at which time not only has there been a feast of learning but also much good cheer and good fellowship. Let us hope that this depressing war will be over soon and that victory will be ours, so that again we may return to the normal flow of our activities.

SOME CUTANEOUS MANIFESTATIONS OF SYSTEMIC DISORDERS*

ADOLPH B. LOVEMAN, M. D.
LOUISVILLE, KY.

The skin has been appropriately called the mirror of the body,¹ in that it reflects the internal condition of the individual in states of health and of disease. Dermatology, as did so many specialties, had a rather poor start. Hebra,² the true founder of our specialty, was more of an externist than an internist and certainly a pure morphologist. He was a keen observer but lacked the ability to correlate his cutaneous findings with systemic disease. It was he who gave to many of the cutaneous diseases the names before which some of you stand in awe. Naturally such a specialty could not live as such, and so it began to diverge from other branches of medicine, developing its own peculiar pathology and methods of therapy. Times have changed considerably, however, in the past few decades, and the pendulum is now swinging in the other direction. Dermatology is no longer considered a specialty set off to itself but, in reality, is thought of as a branch of internal medicine and, as each day passes, there will be noted more evidence of cutaneous manifestations of systemic disease.

If such diseases as the acute bacterial, mycotic and parasitic infections, benign and malignant tumors, and the contact dermatitides could be excluded, it might be said that practically all dermatologic conditions are of endogenous origin. Even the so-called essential diseases as lichen planus and psoriasis will probably, in the very near future, be shown to be outward expressions of some internal visceropathy. Originally it was taught that the skin possessed only such stereotyped physiologic functions as protection against mechanical and chemical insults, regulation of body temperature and secretory and excretory functions. Today, however, this has become more expansive

as the development of medicine in general has progressed. The subcutaneous tissues act as storehouses for water and glucose.³ The outer skin, in some manner—with the aid of sunlight—converts certain provitamins into vitamins. The pigment layer is definitely related to vitamins A and C; the reticulo-endothelial system of the skin is vitally linked with the development of immunity, and the entire cutaneous surface may be considered a testing laboratory for numerous biologic phases of disease, (i. e. Schick, tuberculin and trichophyton tests).

Time will not permit a detailed discussion of the many cutaneous expressions of systemic disorders. Even if it were possible, this would have to include such conditions as the causes of hyper-pigmentation, the chronic infectious granulomata, the acute exanthemata, toxic and focal infective processes, drug eruptions, endocrine and metabolic disturbances, vitamin deficiencies and diseases of the hematopoietic system. I should, however, like to develop the theme suggested by the above and discuss in detail two phases of this interesting subject, namely; drug eruptions and the lymphoblastomas.

DRUG ERUPTIONS (DERMATITIS MEDICAMENTOSA)

By dermatitis medicamentosa is meant an eruption produced by the absorption and hematogenous spread of a drug or its split product. This absorption may take place by injection, ingestion, instillation or inunction. Fundamentally, irrespective of our specialties, we are first of all physicians and, as such, prescribe drugs. We are, therefore, at times responsible for many of the eruptions seen by the dermatologist and other physicians and, hence, should be familiar with some of the more common types; their mechanism of production, and some of the misconceptions about drug eruptions in general. There is not a drug yet synthesized, or found free in nature, to which someone, either now or in the future, will not be known to possess some cutaneous or mucosal hypersensitivity.

DIAGNOSIS OF DRUG ERUPTIONS

One of the most important prerequisites in arriving at a correct diagnosis is to ascer-

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

tain a careful and dependable history. Frequently, unless one questions the patient specifically, he may fail to elicit a history of drug ingestion. In securing an adequate history, therefore, one should not be content to ask the patient whether or not he takes any drugs but instead, ask him if he has headaches and, if so, what he takes for them; if he is constipated and, if so, what cathartic he employs; what he does for his insomnia if he has difficulty sleeping; whether or not he is particularly nervous and, if so, ascertain the type of "tonic" taken. In this manner, the chances of obtaining an accurate history will be greatly enhanced.

Among the more common characteristics of all drug eruptions may be mentioned the following:

1. *Bright Color and Sudden Appearance:* Practically all cases of dermatitis medicamentosa exhibit a bright vivid color at the onset. Likewise, the sudden appearance of an eruption in an otherwise normal individual is highly suspicious of dermatitis medicamentosa.

2. *Symmetry and Widespread Distribution:* In spite of the occasional bizarre nature of the distribution, it is quite often widely spread and symmetrical areas are involved.

3. *Symptoms:* One of the most important characteristics of a drug eruption is the mildness of the symptoms compared with the extensiveness of the eruption. I am always suspicious of dermatitis medicamentosa when an extensive eruption appears suddenly in the absence of anything except the mildest of symptoms. Although this is usually true, yet I have seen individuals critically ill with high fever, nausea and accompanied by a rather marked dehydration. Usually such individuals recover, although many deaths have been reported as a result of drug medication.

4. *Mucous Membrane Lesions:* If one examines the mucous membranes thoroughly in all cases of dermatitis medicamentosa, one will be surprised at the frequency of involvement. Such manifestations vary

from small maculo-papular erosive lesions to a bullous or even gangrenous stomatitis.

Why the particular pattern of an eruption varies in different individuals is not known. It is well recognized, however, that the same drug may produce a different type of eruption in different individuals, whereas different drugs may produce the same type of eruption in some persons. Iodides, for example, usually produce a so-called pustular or acneform eruption in most persons but they may produce, in still others, blastomycotic purpuric or even urticarial lesions. Furthermore, morbilliform or scarlatinaform eruptions may be elicited by many drugs such as the barbiturates, quinine, the sulfonamides, aspirin and arsphenamine. In spite of the above seemingly confused state of affairs, most drugs do produce certain distinct types of eruptions and thus enable us to predict the particular drug employed. Below are listed some of the more common types.⁴ As more drugs are synthesized, naturally this list will increase.

SOME OF THE MORE COMMON TYPES OF DRUG ERUPTIONS

(Modified from Sulzberger)

1. *Eczematous eruptions*—arsenic, mercury, quinine.

2. *Urticarial eruptions*—atropine, belladonna, bromides, the morphine group, iodides, phenacetin, phenolphthalein, salicylates.

3. *Erythematous eruptions*—antipyrine, arsphenamines, barbiturates (barbital, luminal), belladonna, phenacetin, quinine, salicylates, sulfonamides.

4. *Dermatitis exfoliativa* — arsphenamines, heavy metals.

5. *Erythema multiformi-like eruptions*—antipyrine, phenolphthalein, salicylates.

6. *Erythema nodosum-like eruptions*—iodides, bromides and the sulfonamides.

7. *Acneform furunculoid eruptions*—bromides, iodides.

8. *Ulcerative and vegetating eruptions*—bromides, iodides.

9. *Hemorrhagic eruptions*—adalin, antipyrine, arsphenamines, copaiba, ergot,

iodides, quinine, salicylates, sedormid, sulfanilamide.

10. *Photosensitizing eruptions*—acriflavine, gold, sulfanilamide.

11. *Pigment producing eruptions*—arsenic, bismuth, gold, silver, mercury.

12. *Vesicular and bullous eruptions*—antipyrine, arsenic, bromides, chloral, iodides, luminal, phenolphthalein, quinine, salicylates.

13. *Fixed and circumscribed pigmented eruptions*—alurate, antipyrine, arsphenamines, phenolphthalein, sulfanilamide, veronal.

SOME COMMON MISCONCEPTIONS ABOUT DRUG ERUPTIONS

It is not at all unusual, after having once diagnosed a case as a drug eruption, to be informed by the patient that such could not be so because the drug had been taken frequently for many years and that nothing had happened heretofore. The patient's statement, although true, is easily explained. The incubation period, during which time the particular individual becomes sensitized to the drug, varies in different people. The cutaneous response to an allergen seldom, if ever, occurs the first time a drug is taken. Dermatitis medicamentosa is a form of allergy and, by definition, allergy implies an altered reaction—one different from the normal—as a result of subsequent contacts with some allergenic substance. Thus, newborn infants respond negatively to tests with poison ivy extract, trichophytin and tuberculin and only diverge from the normal as they become acquainted with, and hence sensitized to, these particular substances. The same thing is true with drugs. The incubation period may vary from five or six days to as long as several years. It is likewise rather difficult to explain to patients how they may have a drug eruption when they have not taken any drug for a period of several weeks. Not only is it possible for this to occur, but I have seen patients flare up months or even years after discontinuing the drug. The best example of this is seen in the recurrent exfoliative dermatitis at-

tacks from arsphenamine occurring at intervals for several years.

Another very unusual aspect of drug eruptions is the persistence of certain types of eruptions for months after all of the drug has been discontinued. One of the best examples of this is seen in the vegetative lesions following the ingestion of bromides. Not only does this type of drug eruption persist for an indefinite period of time, but it may appear for the first time many months after the drug has been discontinued.

Although the initial incubation period varies from several days to weeks, averaging six to ten days, this is not true of subsequent attacks. As a rule, after one becomes sensitized to a particular drug, there is a flare-up within 24 hours after subsequent doses. I have seen reappearance within several hours after oral medication and, within a few minutes following intravenous injection. This is not always true, however, for refractory periods do exist. I recently saw a case in which the eruption had been proved to be due to sulfanilamide, reproduced on three occasions, and yet, after several months, the drug was tolerated even in large doses without cutaneous or mucosal manifestations. The production of a drug eruption, therefore, is not always dependent upon the size of the dose. Large doses may, at times, fail to elicit a reaction in persons known to possess cutaneous hypersensitivity, whereas infinitesimal amounts may bring forth a response. An example of an infinitesimal amount of drug producing an eruption follows:

A fixed eruption⁵ on both palms accompanied by a sore tongue resulted each time a particular patient took barbitol. She was hospitalized on one occasion at which time her obstetrician gave her a 5 grain (0.32 gm.) tablet of barbitol. Almost immediately there was an emesis and the tablet came up well formed. Within the next 12 hours, however, the patient presented the fixed eruption involving the palms.

In concluding this brief discussion of drug eruptions, I should like to emphasize

that drugs may simulate practically any organic or functional disorder and, furthermore, that the skin is not the only organ at which drug insults are directed. Jaundice, granulocytopenia and purpura are quite frequently encountered following certain drugs. Likewise, headaches, recurrent pain in the brachial plexus and parasthesia of the tongue have been reported as resulting from individual drug sensitization. A patient was recently seen who had pain in the same tooth following each injection of mapharsen,⁵ and I was recently informed of a peculiar type of severe nerve pain resulting from sulfapyridine. These are but a few examples of known non-dermatologic aspects of drug allergy. It is quite conceivable that many heretofore unknown visceral complaints may likewise be of drug origin.

THE LYMPHOBLASTOMATA

The term lymphoblastoma is used to designate certain diseases of the hematopoietic system. Those which give rise to cutaneous manifestations include the leukemias (lymphogenous, myelogenous and monocytic), Hodgkin's disease, mycosis fungoides, lymphosarcoma, and non-leukemic malignant reticulo-endotheliosis. To illustrate that we are not dealing with a rarity in this discussion, I might mention that various authors list cutaneous lesions as occurring in from 10 to 40 per cent of cases of various types of lymphoblastoma.⁶ It should be emphasized at the beginning of this discussion that we are attempting to discuss only the cutaneous manifestations of the lymphoblastomas as a group. The difficulties and relative unimportance of making a specific diagnosis as to the specific type of lymphoblastoma will be discussed later.

There are, in general, two types of cutaneous reactions produced by the lymphoblastomas, namely the so-called specific and the non-specific (toxic). The specific type implies that the same type of histologic picture exists in the cutaneous lesions as is present in the blood, lymph nodes or involved viscera. This may manifest itself as papules, nodules, plaques, ulcers, tumors

or even as a generalized exfoliative dermatitis. The non-specific eruption may be eczematoïd, erythematous, urticarial, herpetic, purpuric or else may show localized or generalized hyper-pigmentation, dystrophic changes in the hair and nails or even a complete alopecia. Any of these cutaneous manifestations may precede, accompany or follow their demonstrations elsewhere in the body. It is not my purpose to discuss in detail the various cutaneous manifestations of these individual diseases. I wish, however, to emphasize one cutaneous finding so common to these diseases as a group that whenever it is observed, one should be very suspicious that he is dealing with one of the lymphoblastomas. This finding is a generalized exfoliative dermatitis or universal scaly erythrodermia. Whenever such a condition is encountered in which there is no history of arsenic ingestion, and which persists in spite of bland therapy, it should be regarded as belonging to one of the malignant lymphadenoses until definitely ruled out. If this is accompanied by an enlarged liver or spleen, generalized lymphadenopathy and fever, the diagnosis is practically clinched.

According to Montgomery,⁶ more than one-third of the cases of generalized exfoliative dermatitis, or universal scaly erythrodermia, appearing in individuals past 40 years of age, are due to one of the lymphoblastomas.

Since Keim⁷ first called the dermatologists' attention to the importance of the various lymphoblastomas, many excellent papers have been written.^{8, 9, 10, 11, 12, 13} The general consensus today emphasizes the close inter-relationship between these various diseases. It is not at all unusual to diagnose clinically and histologically a particular case as Hodgkin's disease, see it eventually develop a specific leukemic blood picture and then at postmortem examination have the same pathologist report the case as a typical lymphosarcoma. According to Wile,¹² these diseases "may so closely simulate each other that a clinical diagnosis must, on occasion, be changed from time to time in the course of the disease."

Perhaps the greatest aid in the diagnosis of the lymphoblastomas is the early skin and lymph gland biopsy, along with bone marrow studies.

With the recent introduction of peritoneoscopy, the dermatologist has another valuable method of securing additional diagnostic evidence. Thus, the skilled surgeon proves almost indispensable in many of these cases.

This biopsy is often quite characteristic, usually showing a marked hyperplasia and the same type of lymphoblastic cell as is seen in the blood and involved viscera. Numerous cases have been so diagnosed from biopsy years before there was other clinical evidence to substantiate this specific diagnosis. A negative biopsy report does not, however, rule out cutaneous lymphoblastoma. Quite frequently exfoliative dermatitis and lymphadenopathy at first reveal histologically only simple inflammatory changes. Later, in the course of the disease, however, a lymphoblastomatous infiltration usually develops. Just as there are mutations and inter-relationships clinically in these diseases, so are there pathologically. Frequently the biopsy will reveal only a non-specific type of lymphoblastoma — the specificity of which may never be diagnosed conclusively or, if so, only by correlation of the clinical, histologic and hematologic findings.

CONCLUSIONS

Only a superficial discussion of this subject has been attempted. The dermatologist should be able to recognize systemic disease and correlate his cutaneous findings accordingly. He should not hesitate to call upon the surgeon, the internist or pathologist to aid him in his attempts to establish an accurate diagnosis. On the other hand, a fundamental knowledge of certain cutaneous disorders is absolutely essential to the surgeon and internist for their successful practice of medicine.

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DISCUSSION

Dr. J. K. Howles (New Orleans): One thing I want to point out is the fact that we will probably be encountering from now on, from the introduction of new proprietary preparations, from vitamins, and sulfonamide therapy, many peculiar and bizarre dermatoses. Bear that fact in mind and be sure to weigh and reweigh the entire picture of the patient's general condition.

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THE USE AND ABUSE OF POSTERIOR PITUITARY EXTRACT IN OBSTETRICS*

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This topic has been discussed so often that it hardly appears worth while to mention it again, but I am prompted to do so because of the gradually developing tendency to resort to the use of this preparation more freely in the conduct of labor. It was felt that the matter was of sufficient importance to justify a symposium on this subject at the 1940 session of the American Medical Association, and those participating in this discussion were very much in accord regarding the major points. The

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question is, whether the policy of absolute abstention from the use of this extract in labor is the proper one, or whether we should relax the prohibitions under certain conditions.

The discussion of the use of posterior pituitary extract concerns its employment in: (a) the induction of labor; (b) the first stage; (c) the second stage; (d) the third stage. Cases falling into these groups present varying problems, so it is best to consider each heading separately.

The use of this preparation in the induction of labor was popularized by Watson's publication⁴ in 1922. He advocated the following system: (a) castor oil, one ounce; (b) 10 grains of quinine sulphate one hour, three hours, and six hours later, with an enema between the first and second doses. If labor did not develop after a wait of six to nine hours, 1/2 c.c. of posterior pituitary extract was given, and this dose was repeated every half hour until labor began, or until six doses had been administered without effect. It was soon found that these large doses of pituitary were not without risk, and that quinine in this dosage was actually or potentially dangerous to the baby. The method was modified by many obstetricians, and has been almost entirely supplanted by Slemon's⁵ method, employing castor oil, quinine, and rupture of the membrane. In using this technic, we must be sure that the head is engaged (it is best not to try it in breech cases), and that the cervix is soft and partly effaced. Reddoch's modification consists in eliminating the quinine and adding the use of one minim doses of pituitary extract every half hour after the rupture of the membranes until labor begins or until six or eight doses have been given without effect. If no effect is produced, the amount may be increased to two, or possibly three minims after the third or fourth dose; a larger quantity is never used. The drug is discontinued as soon as labor begins. In properly selected cases (head well down and cervix soft and partly effaced), labor usually develops promptly, but if delayed will ensue in 24 to 48 hours. In a patient with a long cervix

or an unengaged head, or in a breech presentation, the membranes are not ruptured, otherwise the method is employed as outlined. If induction fails, the attempt may be repeated two or three times, or another method may be used. It has been found that posterior pituitary extract, employed in some such manner for the induction of labor, is safe and efficient. The ironclad rules are: (1) that it should be used only in one or two minim doses; (2) that it must be discontinued as soon as labor begins, and (3) that not more than six to eight doses are to be given in any one trial. The larger amounts formerly advocated produced at times overstrong contractions with danger to mother or baby. I might remark here that in induction, as well as in the stages to be considered next, the intranasal method of Hofbauer⁵ may be employed. This consists of the insertion of a cotton pledget, moistened with 1/4 to 1/2 c.c. of the extract, beneath the inferior turbinate bone. The solution is readily absorbed, and the action may be stopped by withdrawing the cotton.

A considerable controversy has arisen over the question as to the advisability of the use of posterior pituitary extract in the first stage of labor. All are agreed that there is no reason or justification for its employment if labor is proceeding normally. When the pains are of good character, the presenting part has engaged properly, and the cervix is effacing and dilating satisfactorily, there is certainly no indication for trying to accelerate the process. If the pains are good, but the cervix is not effacing and dilating as it should, it is particularly unwise to administer pituitary extract, for thus we would be subjecting both the baby's head and the mother's uterus to undue, and at times dangerous, pressure. Intracranial damage, severe lacerations of the cervix, even rupture of the uterus, might result from the overstrong contractions acting against undue resistance.

On the other hand, if the pains are irregular, infrequent, and weak, that is if the picture is that of primary uterine in-

ertia, it would appear logical to try to stimulate the uterus to better function. There are various methods which might accomplish this, such as castor oil, a hot enema, a warm bath, quinine, calcium, or quinine and calcium combined. If these methods fail, the question of the use of posterior pituitary extract arises. Personally, I prefer not to employ it, and very rarely do so. This is the attitude of the various members of the visiting and resident staffs of the Charity Hospital. Perhaps we are leaning over backwards. From the A.M.A. symposium, and the discussion that followed, it would appear that the carefully controlled use of this preparation, in small doses, is a safe procedure in the treatment of inertia of the uterus. Murphy,⁶ after studying the uterine contractions with the tocograph, concluded that in inertia the dose should be one-half to one minim, and never over two minims. He stated that this amount does not produce tetanic contractions, but that larger doses are liable to do so. His charts show that the effect of this stimulation lasts as a rule for about 30 minutes, after which time it is safe to repeat the injection, if indicated. We must be on our guard, however, for an occasional patient will manifest an overaction from as small a dose as one minim, with very strong contractions, lasting one or two minutes, and an alarming irregularity of the fetal heart tones. With careful watching, then, and the remembrance of the possibility of overaction, we may agree that, in the rare case of true primary uterine inertia in the first stage of labor, the cautious use of $\frac{1}{2}$ to 2 minims of posterior pituitary extract (never more), is permissible. It should not be repeated until 30 or 40 minutes have elapsed, and then only if the effect of the previous dose has subsided. If the contractions are too strong, or if the fetal heart shows distress, ether by inhalation should be given to relax the uterus.

In the second stage of labor, the problem is somewhat different. We must again contend that if the labor is progressing normally, with satisfactory contractions

and proper advancement, this drug should not be employed. Lack of progress means either deficient contractions (secondary inertia), or obstruction to the presenting part, or malposition. Only in the first case is stimulation to be considered, limited if possible to those patients in whom the presenting part is still rather high. If the presenting part is well down, the preference is for forceps in head cases, and for extraction if the breech is presenting. If there is lack of descent due to inertia, attempts at stimulation of the pains are in order, and such methods as the enema, castor oil, calcium, quinine, alone or in combination, might be tried. If these fail, the cautious use of $\frac{1}{2}$ to 2 minims of posterior pituitary extract, as outlined above, may be resorted to, with careful watching of the condition of mother and child. I feel that it is safer, under such circumstances, to employ only enough of the extract necessary to bring the presenting part well down, and then to complete the delivery by forceps or breech extraction. In a primipara particularly the expulsion of the child by the action of pituitary alone is fraught with more risk than delivery by low forceps and episiotomy. If this method is not feasible, as in one-man obstetrics in the home, the use of small, repeated doses of the pituitary extract may be of value in expediting the labor and completing the delivery, with care not to hurry the process unduly. In such a case, episiotomy without forceps, when the head is distending the perineum, will be a useful expedient. Let me repeat that there should be no obstruction, no disproportion, and no malposition when posterior pituitary extract is used in the second stage of labor, otherwise the results may be disastrous.

In the third stage, it is generally agreed that it is best not to give posterior pituitary extract until after the placenta is delivered. Some obstetricians administer it during or just after the birth of the baby, feeling that this practice hastens the separation and expulsion of the placenta and lessens the blood loss. But let us remember, as Calkins⁷ has shown, that the placenta

normally separates in from three to five minutes, and that blood loss can be minimized by keeping the uterus contracted by fundal stimulation, followed by prompt delivery of the placenta when it becomes detached. Occasionally the early use of pituitary extract will result in incarceration of the placenta, and its delivery must be postponed until the uterus has relaxed. Though this seldom occurs, its possibility has caused me to abstain from the use of the drug at this stage, and I prefer to withhold it until after the expulsion of the placenta.

The dangers from the overaction of posterior pituitary extract are well known, and need be mentioned but briefly. On the part of the fetus, there may be intracranial injury, slight or serious, or even fatal intracranial hemorrhage, or asphyxia from interference with the placental circulation. The mother may sustain severe cervical, vaginal, or perineal lacerations, or a combination of these. Much more to be feared is rupture of the uterus. Many cases have been reported, due to the improper use of this extract, and many others have occurred which have not been recorded. Let us not forget that the woman who has had many babies may have a very friable uterus, and in such patients rupture is especially to be feared. Again, let us remember that very strong contractions may follow the administration of 1 or 2 minim doses, so that we should always be prepared to stop such contractions with ether anesthesia. Let us also remember that there is no satisfactory clinical or laboratory proof that the addition of thymus extract is of any advantage. In fact, it has been shown, clinically and experimentally, that the thymus-pituitary preparations depend upon the pituitary content for their efficiency, so we should employ them with all the precautions recommended for unaltered pituitary extract. Finally, let us recall that the advertising slogan "throw away your forceps and use pituitary", which used to be displayed on the back covers of many medical journals, has long since been discarded by the manufacturers.

SUMMARY

What, then, constitutes rational use, on the one hand, and abuse, on the other, of posterior pituitary extract? The proper use consists of its very occasional employment, in small doses, in the first and second stages, as above outlined, where there is definite inertia and no obstruction or disproportion, with careful observation of its effect on uterine contractions and on the condition of mother and child. In the third stage, its use is best limited to its administration after the delivery of the placenta. The drug is improperly employed when it is used indiscriminately to hasten the labor for the doctor's convenience, when disproportion is overlooked, malposition, or obstruction, when doses greater than 1 or 2 minims are employed and when there is neglect to observe its effect very carefully. Properly and carefully employed, under strict indications, it is useful and safe; improperly used, it may produce serious injury or death of the fetus, as well as severe maternal lacerations, and even rupture of the uterus with its high mortality. Let us not forget that it is a powerful uterine stimulant, and let us respect it accordingly.

DISCUSSION

Dr. Harry Meyer (New Orleans): The subject of the use of pituitary extract is a very old one and yet each year there are a number of maternal deaths resulting from the indiscriminate use of these drugs. There are several points I would like to bring out. First of all, Dr. King has warned against the use of pituitary extracts after uterine contractions have begun. Too often we are prone to judge labor by the presence of pain. Frequently we will be in error and by relying upon this symptom many patients are given pituitary extract, having uterine contractions without presence of pain. This does not happen often but at times does occur and furnishes us with one possibility of uterine rupture. Not every case of labor is attended by pain.

Secondly, in the past few years there have been a number of cases of hypersensitiveness to pituitary extracts reported. These have definitely been proved, not supposed cases. The pituitary extract most frequently is given during or following the third stage of labor when the patient is still anesthetized. Many of these patients have been found to go into extreme degree of shock following use of extract as a result of a condition simulating anaphylactic shock.

Producing a rise in blood pressure and having an antidiuretic effect, there seems to be very little need for the use of whole pituitary extracts. Certainly it is contraindicated in patients having any degree of toxemia. Pitocin, or the active oxytocic principle of pituitrin, is preferable. With this drug we must use much smaller doses than we are accustomed to use with whole strength extract or pituitrin. A dose of 1 minim repeated if necessary at 30 min. intervals is large enough usually to produce the result wanted.

Some physicians recommend the use of this principle prior to the delivery of the placenta with the idea of hastening the third stage and limiting the blood loss. Here we must bear in mind the possibility of hour-glass contraction and complications in an otherwise normal third stage of labor. A very normal case can be turned into a complicated one. Simple palpation of the uterus to avoid intra-uterine or post placental hemorrhage will suffice until separation and expulsion of the placenta has resulted.

Dr. C. M. Horton (Franklin): I hesitate to get into a discussion; I am not going to get into an argument with my specialist friends. However, I feel that there are certain conditions that arise in a country practice and certain things are necessary to be done in country practice that are not done and are not required in hospital practice. It is perfectly simple for the doctor to say to have the nurse or some assistant put a hand on the uterus to see how it is doing but those of us in the country frequently do not have any nurses and we do not have all these aids. I realize perfectly well the danger of the use of pituitary extract and I have so far never had any bad results; so far I have never had any ruptured uteri. I am well aware of the fact that I might have. Certainly, and I think all obstetricians in the country will agree, the use of pituitary has certainly reduced the number of cases in which we have to use forceps. It is a perfectly simple thing in the hospital to tell them to get forceps ready, and have somebody to give the anesthetic and do a low forceps. When you have to do your own sterilizing, and under bad conditions, I think the use of pituitary is indicated in those cases. I have never used more than 3 minims at a time and am always prepared to give chloroform after use, if there is undue or alarming contraction of the uterus. I am still using chloroform in obstetrics because of the lack of trained anesthetists and because of length of time required to produce anesthesia. When you can get obstetrical anesthesia with chloroform and use it carefully you do not have difficulty.

Dr. Jos. W. Reddoch (New Orleans): Dr. King has thoroughly covered the obstetrical use of pituitary extract in a most capable and masterly manner. Several points, however, occur to me aside from the dangers of overdoses already mentioned, that might be worth emphasizing:

1. There is an occasional patient who is sensitive to the extract. After its administration, in this case, the patient evidences symptoms of shock, with a fall in the blood pressure, and rapid pulse. The uterus may or may not respond with violent contractions, and the baby may show some evidence of embarrassment. In all cases therefore, the initial dose should be small, and untoward signs watched for.

2. Pituitary extract in the induction of labor where the membranes are ruptured as a part of the induction technic has not only shortened the interval between the time of rupture and the onset of labor, but these patients usually have had a much shorter and easier labor with fewer operative terminations of labor than those who have gone into labor spontaneously. Its use here has to be carefully guarded, and stopped after the patient is definitely having uterine contractions recurring at increasing frequency. In this connection, I would like to warn against the too early use of sedation, which is prone to stop labor and result in a failure of induction.

3. In the first stage, when the patient is having a few minor pains, I agree with Dr. King in the use of calcium or calcium and quinine. My experience in this respect has been most satisfactory, and I feel quite sure that many patients can be spared the dangers of pituitrin by a trial of calcium gluconate or calgluquine, should the pains become inefficient.

4. In the second stage its use should be limited to those cases where there is no disproportion, no malposition, but the pains are weak and ineffectual. Its use then should be confined to those cases where the presenting part is relatively high, and then given in small doses repeated frequently, if necessary using an episiotomy as the head approaches the perineum.

5. I agree completely with Dr. King relative to the third stage. Here an internal os may contract down so tightly that a separated placenta could be retained for several hours, if pituitrin is administered before the third stage.

6. Finally, if pituitrin must be used, use it guardedly in small doses, repeating as the pains die out, carefully watching the condition of the mother and child after its administration. Remember in the toxic case that pitocin is probably to be desired due to the absence of the vasopressor factor found in whole pituitary extract. Pitocin or pituitrin is a most valuable obstetrical adjunct when properly used. But when misused it becomes a curse which may range from simple perineal and cervical tears, to a ruptured uterus and death on the part of the mother and from a rapid, irregular, fetal heart to serious intracranial injuries.

Dr. John F. Dicks (New Orleans): I have enjoyed Dr. King's paper very much. Although pituitrin has been much discussed in the past I think it a good idea to review its value and also its

dangers. Pituitrin, as Dr. King has outlined, should always be used in small doses and repeated if necessary. The only safe time to give a large dose of pituitrin is after the delivery of the placenta. It is a safer procedure to do an episiotomy and low forceps if there is a delay in delivery than to use a large dose of pituitrin. By the use of forceps there is less danger to the child, and tears may be controlled.

Dr. E. L. King (In closing): I am glad Dr. Meyer and Dr. Reddoch mentioned the possible sensitivity to pituitary extract. I have not seen such patients but have heard of some.

I have been asked to say something about the use of stilbestrol preliminary to the induction of labor; whether it has any effect or not. We have found it does not have effect with a live baby. It does seem to help in induction of labor when the baby is dead or in missed abortion.

In reference to the question of giving ergot as the shoulder is being born; this is being done in many communities and has been tried out in the Chicago Lying-In Hospital. Ergot works beautifully in 99 cases out of a 100 and shoves the placenta and baby out; at other times you may have to wait five or six hours because of imprisonment of the placenta. Dr. Reddoch mentioned that often in the first and second stages calcium or a combination of calcium and quinine works very nicely. At the Mayo Clinic calcium intravenously has been used, employing calcium gluconate. We have used calgluquine intravenously and intramuscularly and have had nice results. Four to six c.c. given intramuscularly and repeated in two c.c. doses every hour will help the patient out materially and avoid use of pituitary.

One other thing; pituitary may be used in cases of inevitable abortion to expel the contents instead of an invasion of the uterus.

I agree with Dr. Horton. I was born in the country before the days of pituitary and I have lived in the country and know of the conditions there. There one has a one-man job with no nurses or other trained assistants. It is different in the hospital where we have more people to assist.

In those cases it is permissible, as Dr. Horton brought out, to use small doses carefully guarded, watching the mother, making sure there is no contracted pelvis. In those circumstances it helps things along and I do not see any objection to using it. The difficulty comes in borderline contracted pelvis or malposition. If the patient is getting along nicely given one half minim or more. If large doses are used, say 1/2 c.c., we may cause ruptured uterus, which we see once in a while at Charity Hospital. Regarding the anesthetic, I would say that I have no objection to chloroform. I have not used it in the last few years but it is a good anesthetic.

About the thymus-pituitary preparations; it has been shown conclusively that thymus has no par-

ticular effect. I have looked into the literature and can find no clinical or experimental evidence that the thymus extract is of any value whatever.

CARCINOMA OF THE COLON AND RECTUM*

228 CASES FROM THE CHARITY HOSPITAL
OF LOUISIANA AT NEW ORLEANS
FROM 1935 TO 1941

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AND

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Recent reports in the literature point to an increased incidence of carcinoma of the large bowel. Whether there is an actual increase in the incidence or whether more cases are being recognized than formerly is difficult to determine. Regardless of which is correct, carcinoma of the large bowel is today a serious problem, as it is the cause of more than 35,000 deaths annually¹ in this country

Recent improvements in diagnostic and therapeutic procedures have increased the responsibility of physicians to patients suffering from this disease. In order to find out what we are doing to meet this problem we reviewed the records of patients with carcinoma of the large bowel admitted to the surgical services of the Charity Hospital at New Orleans from January 1935 to December 1941. These patients came not only from New Orleans but also from communities throughout the state, and since the physician who first sees the patient with malignancy of the large bowel plays as important a role in the final results as the one who performs the operation, we believe that our findings will be of interest to the members of the State Society. We hope to bring out in our discussion how the difficulties encountered in the management of this type of case can be overcome and what can be done to improve the results.

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One outstanding difference between the findings at Charity Hospital and those at other clinics is the low percentage of operability in our series (table 1). We be-

Failure to recognize carcinoma of the large bowel is not uncommon. Lynch² reported that one-third of the patients he studied had been treated for hemorrhoids within a few months of the time that a diagnosis of carcinoma of the rectum was made. An accurate estimate was difficult to obtain in our series, but the histories indicate that about 15 per cent of the patients with rectal or recto-sigmoid carcinoma had been treated for hemorrhoids during the six months preceding admission. Many of the patients with malignancy of the colon had been treated during a similar period of time before admission for dyspepsia, colitis, recurrent appendicitis, or anemia. To be able to recognize the disease early we must keep constantly in mind the common sites of malignancy of the large bowel and the symptoms and signs peculiar to carcinoma in these locations.

Table 1
OPERABILITY RATE AND OPERATIVE MORTALITY

Year	Admissions	Percentage Operability	Percentage Operative Mortality
1935	29	24	71
1936	28	29	50
1937	25	40	60
1938	29	31	66
1939	43	33	50
1940	38	40	27
1941	36	70	28
Total	228	38	44

lieve this low rate of operability is due chiefly to two factors: first, failure on the part of the patient to seek medical aid early and, second, failure on the part of the physician to recognize early carcinoma of the large bowel.

Failure to seek medical aid early is not entirely the patient's fault. The profession must make known to the laity the symptoms and signs suggestive of early carcinoma of the large bowel and must encourage patients to seek medical aid early. The American Society for the Control of Cancer and certain life insurance companies are doing excellent work in this field with their cancer education programs. We should give these programs our wholehearted support, and when patients come to us for periodic health examinations we should inquire about symptoms suggestive of early carcinoma and should carefully examine the sites where cancer commonly occurs. One defect of the cancer education programs has been the neglect of the rural population. It is a known fact that patients in rural districts, for one reason or another, delay seeking medical aid longer than those in urban districts. This should be remembered when programs for cancer education of the laity are being arranged, particularly in Louisiana where the rural population forms a large part of the total population of the state.

AGE INCIDENCE
Table 2 shows the age incidence of carcinoma of the large bowel in this series. Seventeen per cent of the patients were under 39 years of age and 5 per cent were below 30 years of age. This is significant, as it indicates that patients with symptoms suggestive of carcinoma of the large bowel must be carefully studied even though they are not in the "cancer age."

SYMPTOMATOLOGY OF CARCINOMA OF THE RIGHT HALF OF THE COLON
Nineteen per cent of the patients in this series had carcinoma of the right half of the colon (table 2). An early symptom pro-

Table 2
LOCATION OF GROWTHS AND AGE INCIDENCE

Age	Right Colon	Left Colon	Rectum	Total	Per Cent of Total Series
10-19	0	2	1	3	1
20-29	2	2	5	9	4
30-39	4	4	18	26	12
40-49	13	13	23	49	22
50-59	13	13	32	58	25
60 up	11	22	50	83	36
Total	43	56	129	228	
	(19%)	(24%)	(57%)		

duced by malignant lesions in this location is vague discomfort in the right lower quadrant. In some series this is reported

to occur in 90 per cent of the cases. In our series it was present in 60 per cent of the cases. The type of growth most frequently found in this portion of the colon is a fungating, bulky growth that is not likely to produce either changes in bowel habit or symptoms of obstruction unless the ileocecal junction is involved. Bleeding occurs in the majority of these lesions but frequently is not noticed by the patient, as blood from this region is intimately mixed with the stool and usually is present in a changed state. In table 3 is listed the percentage occurrence of symptoms in this group.

On the basis of symptomatology, patients with lesions in the right half of the colon have been divided into three main groups. In one group are placed those with a chief complaint of dyspepsia or of vague pains and discomfort in the right lower quadrant. This is the group likely to be treated for chronic appendicitis or gallbladder disease. Priestley and Bargaen³ reported that 15 per cent of 100 patients they studied with lesions in this location had recently had an appendectomy. In another group are placed those with a mass in the right lower quadrant found accidentally by the patient or discovered by a physician during a routine examination for other complaints. A third group consists of those with severe secondary anemia of obscure origin as the chief finding. Although anemia is marked in this last group, it does not indicate advanced or inoperable carcinoma.

SYMPTOMATOLOGY OF CARCINOMA OF THE LEFT HALF OF THE COLON

Twenty-four per cent of the patients in this series had lesions in the left half of the colon (table 2). The scirrhus, constricting or napkin-ring type of carcinoma usually found explains many of the symptoms produced. A change in bowel habit is an important early symptom, and was reported as occurring in 90 per cent of the cases studied by Yeomans.⁴ In our series, this symptom was present in 41 per cent of the patients, as is shown in table 3. The fact that the bowel habit has changed, whatever it may have been, is the important finding.

A history of alternating diarrhea and constipation is found in about 20 per cent of the cases. Symptoms due to partial or complete intestinal obstruction are not uncommon. Bleeding as a symptom was noted in 18 per cent of our patients, but the incidence has been reported to be as high as 50 per cent.

SYMPTOMATOLOGY OF RECTOSIGMOID AND RECTAL CARCINOMA

In our series, 57 per cent of the lesions were located in this part of the large bowel (table 2). Table 3 lists the relative fre-

Table 3
PRESENTING SYMPTOMS OF CARCINOMA OF THE COLON AND RECTUM

	Right half of colon (43 cases)	Left half of colon (56 cases)	Rectum (129 cases)	Entire series (228 cases)
Change in bowel habit	16%	41%	51%	42%
Bleeding	5%	18%	58%	42%
Pain or vague discomfort	60%	41%	49%	50%
Mass in abdomen.....	35%	5%	....	8%
Anemia	9%	....	....	2%

quency of symptoms. Symptoms vary with location of the growth, but common to all locations are bright blood in the stool and pain or vague discomfort in the lower abdomen or perianorectal region. A large number of rectal tumors occur at the rectosigmoid junction, 34 per cent in this series. They are usually scirrhus, constricting or napkin-ring growths similar to those described as occurring in the left colon. An important symptom of rectosigmoid carcinoma is a change in bowel habit. Symptoms due to complete or partial intestinal obstruction are not uncommon, and alternating diarrhea and constipation are found in about 20 per cent of these cases. Lesions in the ampulla are likely to remain asymptomatic for a long period of time and to produce bleeding as an early symptom. Lesions low in the rectum frequently produce tenesmus in addition to symptoms common to all rectal tumors.

EXAMINATION OF PATIENTS WITH SYMPTOMS SUGGESTIVE OF LARGE BOWEL CARCINOMA

Digital examination of the rectum is a most important study. Approximately two-

thirds of all large bowel carcinomas occur in the rectum or rectosigmoid, and it is estimated that between 75 and 100 per cent of these are within reach of the examining finger. This means that almost two-thirds of all carcinomas of the large bowel are within reach of the examining finger.

Proctoscopic and sigmoidoscopic examinations confirm the digital findings and reveal lesions that are missed on palpation. Biopsies can be taken through the endoscope.

A careful abdominal examination may reveal masses in the colon. Symptoms suggestive of carcinoma of the colon necessitate radiologic studies, since such lesions are beyond the reach of the endoscope. Barium enemas and double contrast enemas with fluoroscopic and plate studies are the usual procedures. The radiologist should be given a summary of the history and physical examination to help in the interpretation of his findings. If a carcinomatous lesion is found in the rectum, radiologic studies of the colon are indicated because multiple malignancies are occasionally found in the large bowel.

Examination of the stool should never be omitted. Examination for gross and occult blood is essential and other studies should be made when indicated.

Digital and endoscopic rectal examinations should be routinely performed in periodic health examinations of all patients over 25. No one over this age should be treated for hemorrhoids without benefit of both digital and proctoscopic examinations. This is the only means of preventing repetition of some of the serious mistakes in diagnosis which have been made in the past.

PROGNOSIS

There is no infallible method for determining the prognosis of malignancies of the large bowel. It has been conclusively shown that in carcinoma of the rectum the age of the patient, the duration of the symptoms, and the size of the growth have no bearing on prognosis. Broders⁵ classified carcinoma in four groups according to the degree of cell differentiation, and advocated such studies for determining prognosis. Dukes⁶

studied rectal tumors for extension into surrounding tissues and lymph nodes, and on this basis divided carcinoma of the rectum into the following three classes:

Class A: Growths definitely limited to the wall of the rectum without extrarectal extension or metastasis to lymph nodes.

Class B: Lesions involving the extrarectal tissues by direct extension but without lymph node metastasis.

Class C: All carcinomas with metastasis present in the regional lymph nodes.

Broders, Euie and Laird⁷ compared these two methods of classification and showed that the two systems were equally effective in determining the prognosis. The Dukes method seems simpler and better suited to general use.

MANAGEMENT

Improvements in preoperative preparation and postoperative care have markedly decreased the operative mortality in patients with large bowel tumors. It is considered by many that preoperative and postoperative care affect the final result as much as the operation itself. For discussion of the management, we shall divide patients with carcinoma of the large bowel into two groups: first, those with complete intestinal obstruction at the time of admission and, second, those without complete intestinal obstruction at the time of admission.

MANAGEMENT OF PATIENTS WITH COMPLETE INTESTINAL OBSTRUCTION

Complete obstruction was present in 22 patients in this series. This complication should be handled as a surgical emergency. Non-operative methods of decompression are unsatisfactory and at times dangerous, particularly when the ileocecal valve is competent. When operation is performed, an exploration should be done and if the diagnosis is confirmed some type of decompression is indicated but no attempt should be made to remove the tumor. Care must be exercised in performing exploration, as the distended diseased bowel is easily perforated. Exploration is essential to guard against overlooking a strangulated volvulus and also gives information useful in planning subsequent management.

Colostomy, cecostomy, appendicostomy, ileostomy, and short-circuiting operations can be used for decompression. The location of the growth determines the type of decompression to be employed. With the cecum or ileocecal valve involved, ileostomy or ileocolostomy is necessary. For all growths located beyond the cecum, cecostomy is satisfactory and is the procedure favored by many surgeons. Transverse colostomy, either the simple loop type or the Devine type, can be used for tumors in the left colon, sigmoid colon or rectum, but it is well to remember that a colostomy of the Devine type may interfere with subsequent mobilization of the left colon. Sigmoidostomy is suitable for rectosigmoid tumors and rectal tumors.

The immediate care following decompression should be the usual postoperative care for intestinal obstruction. After three or four days, if the patient's condition permits, a regime similar to the one described below should be started in order to prepare the patient for excision of the growth. The interval between the first and second operations is ordinarily twelve to fourteen days. The procedures performed on the 22 patients with complete obstruction in this series are listed in table 4. The mortality in

Table 4
OPERATIONS ON PATIENTS WITH COMPLETE OBSTRUCTION

	Ileostomy	Ileocolostomy	Cecostomy	Transverse colostomy	Inguinal colostomy	Mikulicz resection	Total
Number of operations	2	3	7	3	3	4	22
Deaths	1	0	3	2	1	3	10
Percentage mortality	50	0	45	67	33	75	45

this type of obstruction is high. Mikulicz resections were done in four instances, but this procedure is not recommended when complete obstruction is present.

PREOPERATIVE MANAGEMENT OF PATIENTS WITHOUT COMPLETE OBSTRUCTION

Since some degree of obstruction usually exists with tumors of the large bowel, rehabilitation of the colon is necessary before operation. During the preoperative period,

dehydration and malnutrition should be corrected and the condition of other organs should be investigated. A satisfactory regime is outlined below:

1. A low residue, low fat diet, high in calories, carbohydrates, proteins, and vitamins should be given during the early part of the regime. During the three or four days before operation the diet should be of the non-residue type.

2. Fluid balance should be maintained. The best indication of a correct fluid balance is an output of 1,000 to 1,500 c. c. of urine daily.

3. The colon should be irrigated with normal saline solution to cleanse the large bowel mechanically.

4. Kidney function, heart function, and blood chemistry findings should be studied and any derangements should be corrected as far as possible. Blood studies should include plasma protein determinations.

5. Transfusions should be given as indicated, and arrangements should be made to have blood available for transfusion at the time of operation.

6. Prophylactic measures against peritonitis should be instituted.

Prophylactic measures against peritonitis are discussed here because of recent developments in this field. Peritoneal vaccination has been in use for years as a prophylactic measure against peritonitis, but the use of sulfonamides is rapidly displacing this procedure.

Sulfonamides are invaluable in the management of large bowel tumors, both to prevent infection and to treat established infections in the wound and peritoneal cavity. The prophylactic use of sulfonamides is accomplished in one of two ways: In one, a sulfonamide such as sulfaguandine is used to reduce the number of organisms in the large bowel; in the other, the concentration in the blood of a sulfonamide such as sulfanilamide is raised to a therapeutic level before operation so as to prevent development of infection from contamination during operation.

Sulfanilylguanidine was recommended by Firor and Jonas⁸ in 1940 for administration

during the preoperative period because it is poorly absorbed from the intestinal tract although it is fairly soluble in water. These properties should allow a high concentration of the drug to be reached in the bowel without toxic symptoms. High concentrations of sulfanilylguanidine in the colon greatly reduce the number of gram-negative organisms but do not appreciably affect the gram-positive organisms. Recently, Firor⁹ stated that he has discontinued the use of sulfanilylguanidine because it is erratic in action and produces toxic symptoms. He now advocates the use of succinylsulfathiazole, a new sulfonamide introduced by Poth and his co-workers.¹⁰ This drug can be maintained in high concentration in the blood and without toxic effects. High concentrations of the drug in the colon markedly reduce the number of coliform organisms present. Reports by Poth and Knotts¹¹ on the clinical use of succinylsulfathiazole are promising. We have not had an opportunity to use it.

We have had excellent results with the prophylactic use of sulfanilamide and sulfathiazole. Sulfanilamide is preferred and the method of administration is as follows: Three or four days before operation the patient is given daily by mouth one gram of sulfanilamide per 20 pounds of body weight, so as to have the concentration of sulfanilamide in the blood at a therapeutic level when operation is performed. Following operation the administration of sulfanilamide is continued by giving one gram per 20 pounds of body weight as an 0.8 per cent solution in normal saline by hypodermoclysis each 24 hours. For a patient weighing 160 pounds, this is accomplished by giving 330 c. c. of an 0.8 per cent solution of sulfanilamide in normal saline solution by hypodermoclysis every eight hours. Administration of the drug is continued for at least five or six days, oral administration being substituted as soon as it is feasible.

Another method used employs no preoperative administration of the drug. At the time of operation 8 to 12 grams of powdered sulfanilamide are sprinkled into the peri-

toneal cavity and wound. Sulfanilamide is given postoperatively as outlined above.

If the drug has been given orally before operation, one or two grams may be supplied locally about the site of anastomosis and in the wound at the time of operation, but the amount applied locally must be taken into consideration in calculating the dosage for administration during the following 24 hours.

Some prefer sulfathiazole, and its use has been satisfactory in our experience. However, it must be used with much more caution, as sulfathiazole is not as soluble as sulfanilamide, and disturbances in urinary excretion may cause crystals of sulfathiazole to precipitate in the urine and block the kidney. Uremia and very high blood levels of the drug follow, with severe toxic symptoms.

OPERABILITY

Operability is determined by: (1) the degree of fixation of the tumor and the amount of involvement of adjacent organs; (2) the extent of lymphatic metastasis, and (3) the presence or absence of blood-borne metastasis. Thirty-eight per cent of the patients in this series had operable lesions (table 1) and this low operability rate has been discussed in the early part of the paper. It is seen in table 1 that the operability rate has increased during the past year. It is now generally advocated^{12,13,14} that when it is technically possible to remove a malignant growth of the large bowel without too great a risk to the patient's life, resection should be done even if distant metastasis exists. Although cure is not expected, it has occasionally been observed and if the patient is not cured he is at least more comfortable during the remainder of his life.

OPERATIONS ON THE COLON

Operative procedures described for the removal of tumors of the colon fall into two main groups: (1) One-stage resections, in which the segment of bowel containing the tumor is removed and continuity of the bowel lumen is established at one operation. The anastomosis may be of the open type or of the closed or aseptic type. (2) Two-stage

resections, in which resection of the bowel and establishment of continuity of the lumen is accomplished in two or more operations. An ileo-colostomy may be performed first and the diseased segment removed later, or the diseased segment may be removed first and continuity of the lumen established later. Most of the two-stage resections are modifications of the Mikulicz operation. Under these general headings in table 5 are listed resections of the colon and sigmoid colon performed in this series. In table 6 are listed the palliative procedures done for carcinoma of the colon.

Table 5
RESECTIONS OF THE COLON

	Right Colon		Left Colon		Total Number		
	Operations	Deaths	Operations	Deaths	Operations	Deaths	Percentage Mortality
One-stage resections	15	7	14	8	29	15	52
Two-stage resections	4	1	10	5	14	6	43
Total	19	8	24	13	43	21	50

Table 6
PALLIATIVE OPERATIONS

	Right Colon		Left Colon		Rectum		Entire Series		
	Operations	Deaths	Operations	Deaths	Operations	Deaths	Operations	Deaths	Percentage Mortality
Ileocolostomy ..	8	1	1	1	0	0	9	2	22
Ileostomy	3	1	1	1	1	1	5	3	60
Cecostomy	0	0	5	4	6	4	11	8	73
Transverse colostomy ..	0	0	4	3	9	4	13	7	54
Inguinal colostomy ..	0	0	0	0	37	19	37	19	51
Total	11	2	11	9	53	28	75	39	52

OPERATIONS ON THE RECTUM

It is now generally accepted that a permanent colostomy is necessary if resection of the rectum is to be sufficiently radical to offer the best chances of cure. Procedures advocated for resection of the rectum fall into three general classes: (1) Two-stage removals such as the Lockhart-Mumery operations, in which a permanent colostomy is first done and later a perineal

excision of the rectum is performed. (2) The one-stage abdominoperineal resections such as the Miles or Rankin operations. (3) The two-stage abdominoperineal operations such as the Lahey or Rankin two-stage operations. Table 7 lists resections of the rectum

Table 7
RESECTIONS OF THE RECTUM

	Operations	Deaths	Percentage Mortality
Colostomy and perineal excision..	3	1	33
One-stage abdominoperineal	30	11	37
Two-stage abdominoperineal	12	6	50
Total	45	18	40

performed in this series. In table 6 are listed the palliative procedures done for rectal lesions.

POSTOPERATIVE CARE

Postoperative care must be individualized according to the procedure employed but in all cases should include the administration of sulfonamides and transfusions, the maintenance of fluid balance, and the use of oxygen and nasal suction.

OPERATIVE MORTALITY

The operative mortality for resections in this series is 44 per cent (table 8), which is

Table 8
RESECTION OF COLON AND RECTUM

	Operations	Deaths	Percentage Mortality
Right colon	19	8	42
Left colon	24	13	54
Rectum	45	18	40
Total	88	39	44

quite high when we consider that mortality rates as low as 5 to 10 per cent are reported in the literature.^{13,15} However, mortality rates comparable to ours are found in other clinics where the volume of large bowel surgery is small and the number of surgeons caring for such patients is large. Bieren¹⁶ reported a series of 254 cases of large bowel tumors from the University Hospital in Baltimore in which 79 resections were done with an operative mortality of 38 per cent. Eades¹⁷ reported 25 operations from a small

general hospital in Detroit with a mortality rate of 44 per cent.

An analysis of the mortality rate for resections in our series by years reveals results that are somewhat encouraging. In table 1 it will be noted that in 1935 the operative mortality was 71 per cent and the operability rate was only 24 per cent. In 1941 the mortality rate was 28 per cent and the operability rate was 70 per cent.

Some of the reasons for the poor results are evident in a study of the records. Rehabilitation of the colon was frequently neglected; correction of derangements of function in other organs and of changes in the blood chemistry were not always attempted; peritoneal vaccination was not employed and sulfonamides were not used as often as they should have been. Equally deficient in many instances was the post-operative care. Another important element in the high mortality was the fact that the 88 resections reported in the series were performed by 31 different operators.

The experience of the Louisiana State University Surgical Service in Charity Hospital during the past two years demonstrates what can be accomplished toward lowering the mortality rate. During this period particular attention was given to large bowel cases because of the very poor results which had been obtained in the past. All patients with symptoms of large bowel malignancy were carefully studied and meticulous attention was given to both preoperative and postoperative care, follow-

performed on this Service during 1940 and 1941 with a mortality rate of 9 per cent (table 9).

SUMMARY

1. Two hundred and twenty-eight cases of carcinoma of the colon and rectum admitted to the Charity Hospital of Louisiana at New Orleans between 1935 and 1941 are reviewed.

2. Seventeen per cent of the patients were below 40 years of age.

3. The operability rate in 1935 was 24 per cent and in 1941 it was 70 per cent.

4. The role of cancer education programs and periodic health examinations in the early diagnosis of carcinoma is discussed.

5. Nineteen per cent of the growths in this series were in the right colon, 24 per cent in the left colon, and 57 per cent in the rectum.

6. Pain or vague discomfort in the right side of the abdomen and a mass in the right side of the abdomen were the chief symptoms in patients with carcinoma of the right colon.

7. Change in bowel habit, pain or vague discomfort in the abdomen or perianorectal region, and bleeding were the chief presenting symptoms of carcinoma of the left colon and rectum.

8. Examinations indicated for patients with complaints suggestive of carcinoma of the large bowel are discussed.

9. Twenty-two of the 228 patients in this series had complete intestinal obstruction as a complication of large bowel malignancy at the time of admission. The management of this complication is outlined.

10. The importance of preoperative and postoperative care in the management of patients with carcinoma of the colon and rectum is discussed. Methods of using sulfonamides as a prophylactic against peritonitis are outlined.

11. The operative mortality for resections in the entire series was 44 per cent. The mortality rate has shown a gradual decrease from 71 per cent in 1935 to 28 per cent in 1941.

12. Twenty-three resections were performed 1940 and 1941 on the Louisiana

Table 9
RESECTIONS OF THE LARGE BOWEL PERFORMED
BY THE LOUISIANA STATE UNIVERSITY
SURGICAL SERVICE OF CHARITY
HOSPITAL, 1940 AND 1941

	Number of Operations	Deaths
One-stage resections of colon..	4	1
Two-stage resections of colon..	3	0
One-stage resections of rectum	15	1
Two-stage resections of rectum	1	0
Total	23	2 (9%)

ing more or less the plan outlined in this paper. Under such a regime there were 23 consecutive resections of the large bowel

State University Surgical Service with a mortality rate of 9 per cent.

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DISCUSSION

Dr. Maurice Lescale (New Orleans): This paper covers a very broad field and there are many phases that need to be taken into consideration. There are two that have been brought out by the doctors that I wish also to call attention to; because of their great importance it is impossible to over-emphasize them. These are early diagnosis and careful and thorough preoperative and postoperative care.

The statistics given in this paper, as well as reports from elsewhere, show a lamentably large percentage of inoperable cases. This is due to late diagnosis, sometimes the fault of the patient in presenting himself long after symptoms have begun, and sometimes it is due to lack of thoroughness on the part of the physician in examining the patient. Too often there is no examination at all. The patient is just treated symptomatically and valuable time is lost, time during which the growth

passes from the early or operable stage into the later or inoperable stage.

As stated by the authors, the final outcome of any of these cases is influenced by the kind of pre-operative preparation and postoperative care received. They have outlined a very thorough plan of care such as these patients should receive.

Rosser says, "The colon, an increasingly frequent site of malignancy, is a favorable site from the surgical standpoint because wide removal of involved and potentially invaded tissue is mechanically possible without impairment of subsequent health or function. Despite a continued regrettable lag between the onset of symptoms and the discovery of the lesion, the operability rate is now much higher than that found in rectal tumors."

He further states: "There is an arresting and almost constant symptom complex characteristic for each location: Anemia and afebrile 'appendicitis' on the right; indigestion, colic or diarrhea in the mid-colon; and continuous or intermittent afebrile constipation, colic or diarrhea with blood stained stools when the growth is in the left colon."

Also, the presence of any degree of unrelieved obstruction has been conceded to contraindicate single stage operative procedure. The frequency of the obstructive syndrome in individuals with colonic tumors may not be disregarded in planning their surgical management for as Tiffany bluntly stated: "Resection in the face of obstruction is fatal."

For tumors of the rectum and rectosigmoid, Hayden, McIntyre and most others, favor one stage procedures.

Dr. R. M. Penick, Jr. (New Orleans): Dr. Romano and Dr. Trachtenberg have presented a very timely paper, indicating the magnitude of the problem of treatment of carcinoma of the large bowel. That it is a large problem is indicated by several facts brought out. In the first place, a great many more patients die in the United States from carcinoma of the colon than from appendicitis; coupled with the fact that the patients who present themselves for treatment have a relatively low operability and relatively high mortality; thus we can see the scope of our problem well outlined for us.

As indicated, this whole problem falls into two categories. First, I think, is the question of early diagnosis; second, is the improvement of our surgical treatment. A great many organizations are doing excellent work in the education of the public to regard the symptoms of early carcinoma of the large bowel with suspicion.

There is one point in the problem which I would like to touch on briefly, which affects the physicians principally, that is, the whole question of periodic health examinations. It seems to me that the medical fraternity has failed in this respect. Too frequently one of two things happen when a patient goes to a physician for a periodic examination, particularly when he has in mind carcinoma.

Sometimes after talking to the patient for a few minutes the physician tells him, "You have no carcinoma, go home and forget it." The patient leaves, not satisfied, and is unlikely to go back for any further periodic examinations. The other patient perhaps will go to a doctor more cancer-conscious and he ends up with having had several examinations which are very good but sometimes not entirely indicated, and most important he has a large bill and he is unlikely to go back to a physician twice a year when that happens to him. I would like to see the various medical societies take some positive action in regard to this particular problem because I think it is so important and I think the whole thing could be improved a great deal if the doctors cooperated better.

The question of improvement of our surgical results, is, of course, one that interests us primarily. It has already been mentioned that in some instances, some clinics reported a mortality of around 10 per cent. On the other hand I would venture to question that the mortality at the Charity Hospital is probably more representative of the mortality of the country as a whole than a mortality of around 10 per cent. Yet, most important, as pointed out, on one of the services at Charity Hospital the mortality for two years, with twenty some odd cases, was only 9 per cent. So there is no doubt that we can improve our operative results, not only as far as survival is concerned but at far as cure is concerned.

Several things in the paper interested me and I might point them out briefly. One is the fact that in a good many of the cases mentioned, there was not a history of change in bowel habit. In most series this has been the predominant symptom in carcinoma in any point in the large bowel and it is one that we should keep in mind when attempting to evaluate the patients from the standpoint of diagnosis and procedure. Another thing that is interesting in the figures presented is that in almost every instance the two-stage operation seemed to be safer than the one-stage operation. I think this is most important. One-stage operations on the rectum, when abdominal perineal resection is done, is probably the one to be desired but with the lesion in the other portions of the large bowel it seems to me, in my experience, that whenever possible two-stage operations are much safer. In this connection I would like to say that I think some type of Mikulicz procedure is perhaps the most safe type of resection and when handled properly has excellent results with perhaps only a small increase in amount of time that the patient has to be hospitalized.

Dr. J. E. Heard (Shreveport): There are some points in connection with carcinoma of the rectum which are always emphasized and with which we are all familiar, but for some reason often fail to put our knowledge into practice. One thing is that a very high percentage of cancer of the rectum can be found with digital examination of the rec-

tum. It has often been said that no physical examination is complete without a digital examination of the rectum. Another thing, hemorrhoids should never be treated without a further examination of the rectum to rule out the possibility of a growth higher up. I have frequently seen these cases, with multiple operations on hemorrhoids, when all the time there was probably a cancer present higher up as the malignancy showed up later following the treatment for hemorrhoids, and the surgeon had failed to examine the rectum higher up.

We handle a goodly number of these cases, usually following Rankin's technic, and so far in comparison with other statistics, our results are not disappointing. Another point is that, if possible, biopsies should always be done, as I have known of cases subjected to formidable operations, the surgeon thinking that he was dealing with malignancy, only to have examination of the specimen reveal a benign condition.

Dr. Romano (In closing): In conclusion, I wish to state that in order to improve our results and to overcome difficulties in the management of patients with large bowel carcinoma, we should:

1. Encourage cancer education programs and periodic health examinations.
2. Keep in mind the frequent occurrence of carcinoma of the colon and rectum, the common sites of such lesions, and the signs and symptoms peculiar to carcinoma in such locations.
3. Make it a rule never to treat a patient over 25 years of age for hemorrhoids without benefit of endoscopic and digital rectal examinations.
4. Give more attention to preoperative preparation and postoperative care.
5. Include the prophylactic use of sulfonamides in the management of these patients.

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RESULTS OF GASTRIC RESECTION IN A SINGLE SERVICE AT THE CHARITY HOSPITAL*

L. H. STRUG, M. D.†
NEW ORLEANS

In 1933 Maes published a study of carcinoma of the stomach at the Charity Hospital of Louisiana at New Orleans covering the ten-year period from 1922 through 1931. During this time, 758 patients were treated for carcinoma of the stomach. The last 200 surgical cases in this group were selected for detailed study. Ninety of these

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patients died in the hospital. Gastrectomy could be performed in only 35 of the patients, a resectability of 17.5 per cent. The operative mortality for the group subjected to resection was 51.4 per cent.

In 1941 Boyce continued the study of carcinoma of the stomach at this hospital, covering the period from 1922 through 1941. During this time, 1,921 patients were treated for carcinoma of the stomach and only 619, or 32.5 per cent, were subjected to surgery. Boyce also studied 200 selected cases submitted to surgery and found that gastrectomy could be performed in only 55 cases, a resectability of 27.5 per cent. The increase in resectability Boyce felt was due not so much to an increase in the number of cases resectable as to extension of the indications for resection. There were 31 deaths in this series, a hospital mortality for gastrectomy of 56.3 per cent, a slightly higher figure than that found in the previous analysis by Maes at the same hospital.

In view of the fact that the figures mentioned above are from the surgical service of the entire Charity Hospital and that the Surgical Service of the Louisiana State University Medical School is an integral part of this service, it occurred to me that a more detailed analysis of such cases from this controlled service might shed some light as to whether we are progressing in the right direction.

In the ten-year period from 1932 through 1941, there were 126 patients on this service who were operated upon with the intention of performing gastrectomy if possible. Of these, 94 had carcinoma of the stomach and 32 had either gastric or duodenal ulcer. In only 67 cases was resection feasible. These 67 cases included carcinoma of the stomach and both gastric and duodenal ulcer. The operations, though performed by 20 different surgeons, were fairly uniform in technic and in preoperative and postoperative treatment.

The operability of the total number of cases could not be determined because of the lack of an adequate record system prior

to 1937. However, of the 67 cases in which gastrectomy was performed, 40 were done for carcinoma of the stomach and the remaining 27 for gastric or duodenal ulcer. In this group of 67 cases there were 15 deaths, an immediate mortality of 22.4 per cent. In the 40 cases of carcinoma of the stomach which were resected there were 14 deaths, an immediate mortality of 35.0 per cent. In the group of 27 cases resected for gastric or duodenal ulcer, there was one death, an immediate mortality of 3.7 per cent.

It is apparent that the mortality for gastrectomy in carcinoma of the stomach on this service (35.0 per cent) is lower than that for the Hospital as a whole (56.3 per cent) during the ten-year period.*

INCIDENCE

Study of the statistics by five-year periods shows that the improvement in mortality rate came in the second five-year period. In the first five-year period, 1932 through 1936, there were 13 cases of carcinoma of the stomach in which gastrectomy was performed, with seven deaths, a mortality of 53.8 per cent. This is in line with the mortality rates quoted by both Maes and Boyce. In the second five-year period, 1937 through 1941, there were 27 gastrectomies performed for carcinoma of the stomach, with seven deaths, an immediate mortality of 25.9 per cent. This shows a definite improvement, both in the larger number of patients operated upon and in the lowered mortality rate. An even more striking improvement was noted during the past two years, 1940 and 1941. In this period there were 35 gastrectomies performed for carcinoma or ulcer, 21 for carcinoma of the stomach and 14 for duodenal or gastric ulcer. During this period there were 117 patients with carcinoma of the stomach admitted to the service, of whom 31 were submitted to operation. This represents an operability of 26.5 per cent, which is practically the same as that quoted by Balfour, Lahey, and others. Resection

*It is interesting to note that a parallel improvement in results was found in a recent study of carcinoma of the large bowel by S. A. Romano.

was performed in 21 of these patients, a resectability of 17.9 per cent, approximately the same as that reported by Maes. There were four deaths, a mortality rate of 19.0 per cent.

In the first five-year period six gastrectomies were performed for ulcer, with no deaths. In the second five-year period, 21 patients had gastrectomies performed for ulcer, with one death, an immediate mortality of 4.7 per cent. In the latter part of the second period, 1940 and 1941, there was one death in the group of 14 resections performed for ulcer, a mortality of 7.1 per cent.

That the mortality for gastrectomy in carcinoma can be brought much lower has been demonstrated at such centers as the Mayo Clinic, where it has been reduced to 8.8 per cent, as reported by Walters, Gray and Priestley in a study of 260 cases in 1940. Others who report low mortality figures are Judine of Leningrad, with 6.0 per cent in 168 cases, and Verbeley's Clinic in Budapest, as reported by Emerson and Czirer, with 4.8 per cent.

However, in most instances the mortality is exceedingly high; for example, Rippe reports a mortality rate of 30.3 per cent; Oughterson, 52.6 per cent; Abrahamson and Hinton, 58.2 per cent; and Sauer, 42.8 per cent. These latter figures are from general hospitals where the patients are more likely to present the same clinical picture on admission as do our patients at the Charity Hospital.

In our series, of the 40 patients who had gastric resection for carcinoma, 32 were males and eight females. Thirty were negroes and ten were whites, a ratio of three to one, in spite of the fact that the ratio of general admissions at the Charity Hospital is slightly greater with the white race. This ratio indicates a disproportionately higher rate of incidence in the negro than do results published elsewhere concerning the incidence of carcinoma. However, we must take into account the large negro population in this locality. This would account for some decrease in the prevailing ratio of whites to negroes, but not for the

marked disproportion shown in this series.

The age groups in our age series of cases seemed to follow the usual pattern. Sixteen, or 40 per cent, occurred in the fifth decade of life; 13, or 32.5 per cent, in the sixth decade; and eight, or 20 per cent, in the seventh decade. The remaining three patients were below 40 years of age. The youngest patient in the group was 32, the oldest 67.

In the cases in which gastrectomy was performed for ulcer, a preponderance of males over females was also apparent. Twenty-three cases occurred in males, and only four in females, a ratio of six to one.

In the group of ulcer cases the preponderance of cases seemed to fall in the fifth decade. The youngest patient was 18 and the oldest 67 years of age.

In the 40 patients who had resections performed for carcinoma of the stomach, there was an average duration of symptoms of 10.5 months. Each of the 40 patients had had symptoms for at least two months or more. The minimum time was two months and the maximum time ten years. The number of patients who had had symptoms less than six months was 10, or 25 per cent. Those who had had symptoms six months or more totaled 29, or 72.5 per cent; more than one year, 14, or 35 per cent; more than two years, four, or 10 per cent. There were two patients in whom the duration of symptoms extended to five years or more. This fact, if the patients were telling the truth, would lead one to believe either that the malignant growth was of a very slow-growing type or that a malignancy became superimposed upon a chronic gastric ulcer. This statement brings into the fore again an age-old controversy. Boyce states that in a combined series of 400 surgical patients, 101, or just over 25 per cent, presented histories more or less definitely suggestive of gastric ulcer. Of the 14 patients in our series who died following gastrectomy for carcinoma, four gave a history of onset of symptoms dating back six months or less. In none were the symptoms of less than three months' duration. The remaining ten

patients in this group gave a history of symptoms dating back six months to ten years. However, I do believe that very little credence can be given to the truth of the histories as they are stated, particularly with respect to negro patients. In a large majority of these cases the duration of symptoms as recognized by the patients dates back only to the onset of pain or to symptoms which prevented them from performing their usual occupations. They rarely go back to the earliest discomfort or to the first gastric or constitutional symptom noted. Yet, on the other hand, it hardly seems credible for symptoms actually due to a malignancy to date back ten years and for the patient still to be alive.

In the patients who had resections performed for ulcer, the average duration of symptoms was 33 months, the minimum time being two months, and the maximum time 16 years. The patient who had had symptoms for 16 years was found to have a gastric ulcer.

The average weight loss in the patients subjected to resection for malignancy was 24 pounds. The smallest weight loss recorded was five pounds and the greatest 60 pounds; however, the maximum weight loss occurred over a period of fourteen months. The greatest weight loss over the shortest period of time was in a patient whose symptoms had been present only three months and who had lost 50 pounds during that time.

This is in line with the marked weight loss frequently reported by others (Lahey and Larson). Some of their patients lost as much as 100 pounds within a comparatively short period of time.

The average weight loss in the patients who had resections for ulcer was 13 pounds.

The 67 gastrectomies performed were of various types. Forty-four were of the Polya type, with posterior anastomosis; 11 were of the Polya type, with anterior anastomosis. The Hofmeister procedure was of the anterior type and 10 were of the posterior type. In one patient with gastric ulcer, prepyloric in location, the Billroth I type of procedure was employed.

In 16 cases there was evidence of regional metastasis at operation; in spite of this, gastrectomy was performed. In none of these cases were there any metastases to the liver. In 24 cases there was no visible evidence of metastasis. Of the 16 cases with evidence of regional metastasis at the time of operation, the diagnosis was confirmed by the pathologist in only 10.

ANALYSIS OF DEATHS

There were 14 deaths in this group of 40 patients who had resections for carcinoma of the stomach. There was one death in the group of 27 patients who had resections performed for ulcer.

Of the 14 deaths in patients with carcinoma of the stomach, 10 occurred in males and four in females. The youngest patient was 43 years of age. Three patients died of surgical shock within 48 hours after operation. There were two deaths from cardiac failure, three and five days postoperatively. Two succumbed from pneumonia, on the fifth and eighteenth days following operation. Three deaths were due to peritonitis; at postmortem examination leaks were found at the stoma, at the lesser curvature, in two of these instances. In one case hemorrhage was the cause of death, occurring on the second postoperative day. The remaining three patients died as a result of massive pulmonary collapse, pulmonary embolus, and wound disruption.

The one death following resection for ulcer occurred in a 36-year-old negro male. The patient did very well during the first three postoperative days, and then suddenly developed jaundice and a rapid rise in temperature to 105° and above. There was no pain associated with the jaundice and high fever. He succumbed on the fourth postoperative day, probably from liver failure.

What could we have done to prevent some of these deaths? Out of the total of 14 deaths from resection for carcinoma, there were three deaths from peritonitis. This is a somewhat lower proportion than that reported by Larson, in whose series of 231 resections for carcinoma or ulcer, performed by 50 different surgeons, there were

79 deaths, of which 27 were due to peritonitis. Leaks resulting in peritonitis are due to faulty technic and can be eliminated by increased experience. This can be accomplished by centering this type of surgery in a few capable hands, so that experience in these procedures can be accumulated.

It is readily apparent from the records of the seven patients who died during the first five-year period, 1932 through 1936, that there was marked inadequacy of preoperative and postoperative treatment. The three deaths from surgical shock might have been prevented had adequate preoperative measures been taken to make these patients better surgical risks. Postoperatively also, more adequate supportive measures should have been employed. In the second five-year period, 1937 through 1941, considerable emphasis was placed on preoperative and postoperative care, and in this group no deaths occurred as a result of surgical shock.

Two cardiac deaths occurred in the first five-year period, both in patients in the seventh decade of life. Both patients admittedly had cardiac disease, yet their records show that they received little or no preoperative preparation to enable them to withstand such a radical procedure as gastrectomy.

Of the remaining deaths, two were due to pneumonia, one to hemorrhage, one to pulmonary collapse, one to pulmonary embolus, and one to wound disruption.

Proper preoperative preparation of patients was an important factor in lowering the mortality rate in the second five-year period. The widespread use of preoperative blood transfusions improved the condition of the patients and made them better operative risks. Also, postoperative supportive measures were beneficial in the recovery from the operative procedure. The formation and maintenance of an adequate resident staff was an especially important factor in improved preoperative and postoperative care for these patients.

Other factors in the improved results achieved in the second five-year period were

improved anesthesia technic and better working cooperation with the medical service, which without a doubt sees the majority of these patients first, transferring them to the surgical service once the diagnosis is established.

Early diagnosis is still the most important factor in reducing the mortality rate of gastric resection. What can be accomplished with the radical procedure of gastrectomy is very amply demonstrated in the extremely low mortality rates for resection in duodenal and gastric ulcer. The great difference in the mortality of resection for ulcer and resection for carcinoma is evident. The mortality of resection for ulcer is simply the mortality of resection, while that of resection for carcinoma is the mortality of resection plus the mortality of carcinoma. Thus, it is obvious that if carcinoma could be recognized early and resection performed promptly, a mortality rate comparable to that of resection for ulcer could be obtained. Another factor which has played no small part in the high mortality in carcinoma is the fact that patients with carcinoma of the stomach are usually in the sixth or seventh decade of life and frequently have the disabilities which go with these age groups, thus making them bad risks for any type of operation.

As the mortality for resection is gradually lowered, the indications for operation should be extended, as has been pointed out by Rives. Only in doing this will we be able, in the aggregate, to relieve or cure a greater number of the patients who require resections.

Although this is a small series of gastric resections in comparison with some of the others that have been published, the increase in the number of resections being performed is gratifying, and the gradual lowering of the mortality rates indicates progress in the right direction.

CONCLUSIONS

Analysis of the 67 gastric resections performed for carcinoma on the L. S. U. Surgical Service of the Charity Hospital during the ten-year period from 1932-1941, shows a mortality rate of 35 per cent for

this service as compared with a mortality rate of 56.3 per cent for the Hospital as a whole during the same period of time.

During the five-year period from 1932 through 1936, the mortality rate for gastric resections on this service was 53.8 per cent; during the five-year period from 1937 through 1941, it was 25.9 per cent; and during the past two years, 1940 and 1941, it was 19.0 per cent, indicating progressive improvement in results.

This gradual lowering of the mortality rate of gastric resection is due to the following factors: earlier diagnosis; better preoperative and postoperative care of patients; improved operative technic; improved anesthesia technic; and better working cooperation with the medical staff.

Further reduction of the mortality rate can be brought about through earlier diagnosis; improvement of operative technic; and extension of the indications for operation.

The mortality of gastrectomy for duodenal and gastric ulcer is the mortality of gastrectomy per se and approximates very closely the mortality reported by other clinics.

As carcinoma of the stomach is recognized earlier and resection performed more promptly the mortality of resection for carcinoma will approach more nearly the mortality for resection.

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DISCUSSION

Dr. E. L. King (New Orleans): I do not know anything about gastric surgery or cardiac surgery but I think that these reports show us the value of having trained residents at Charity Hospital. Dr. Strug, I am sure, will say that the work that was done on the service was greatly facilitated by good residents.

We have the same experience in the obstetrical service. Our mortality has been considerably decreased since the residency system has been established and the same is true with other hospitals. Cooperation with young men working in the various branches is of great importance and I think the moral is that all of us today feel that the residency system at Charity Hospital should not be crippled.

Dr. Morris Shushan (New Orleans): I enjoyed this presentation very much. There is only one side of the situation which Dr. Strug has not portrayed; namely, the number of five year cures resulting from surgical therapy in this and similar groups of patients with gastric carcinoma. Several years ago I spoke with a surgeon who, after a long career of gastrointestinal surgical practice, had yet to obtain a five year cure by gastric resection. The results in this present series of cases no doubt allow for much improvement.

Several things can be done to improve conditions so that we will be able to help more patients with cancer of the stomach. X-ray methods should be more widely used. The only disadvantage of this method at present is the cost. The future will make possible the use of the miniature film for making x-ray records. X-ray examination of the gastrointestinal tract should some day become a part of the periodic health examination.

The gastroscope is another method of study which will help in detecting early cancer of the stomach. After personal experiences with this instrument I feel that it should be used much more often.

With the aid of these methods it may become possible to send these patients to the surgeon early and in this way cure a larger percentage.

Dr. Strug (In closing): I agree thoroughly with Dr. King and admit that I did not place as much emphasis as I should have liked on the important role the resident staff has played, particularly on

our service. In our first five year period we had no resident staff and it was impossible to watch each patient postoperatively. In the second five year period we had an excellent resident staff and they have played a tremendous part in lowering our mortality, as you can see by the fact that no patients died of surgical shock.

As to the follow-up on these patients, we should have liked very much to have follow-ups on these cases particularly in patients in the first five year period to see whether or not we obtained five year cures. The only patients seen again were two readmitted, one an ulcer case readmitted for symptoms other than ulcer; the other, resected for carcinoma, was readmitted with widespread metastasis. There was one other patient I personally resected for gastric ulcer approximately eight years ago whom I was able to contact. He was in excellent health.

I do feel that gastroscopic examination has been sadly neglected. However, in most instances, there was no one sufficiently trained in gastroscopy to perform this procedure.

SUCCESSFUL SUTURE OF STAB WOUND OF HEART*

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NEW ORLEANS

Successful suture of heart wounds with recovery of the patient and return to normal activity is by no means rare. The first successful suture was done by Rehn in 1896. Since that time the number has progressively increased and a review of the literature reveals that approximately 300 heart wounds have been successfully sutured.

This case is reported because it is thought to be one of the largest cardiac wounds ever successfully sutured in a patient past the fifth decade, and because it brings out the value of early diagnosis, operation, and the use of an emergency plasma bank, without which this patient probably would never have survived.

CASE REPORT

W. H., a negro man of 50 years was admitted to the Charity Hospital at 10:15 p. m., March 29, 1942. Twenty minutes previously, while arguing with his wife, he had been stabbed in the chest with a Texas jackknife. He fainted within a few

minutes and remembers nothing until the next day. The patient was rapidly transferred by ambulance to the Charity Hospital, which was only a few blocks away.

Examination revealed blood gushing from a wound over the left fifth costal cartilage, about 1 cm. from the left sternal border. The patient was not aware of his surroundings; respiration was shallow and labored. The skin was cold and moist; there was cyanosis of the lips and tongue, and the neck veins were congested. The pulse and arterial pressure were absent; radial arteries were markedly sclerosed. Heart sounds could not be heard. A diagnosis of cardiac tamponade following stab wound of the heart was made and immediate operation was scheduled.

Thoracic instruments were sterilized during transfer of the patient from the Emergency Room. Under light cyclopropane anesthesia with a high percentage of oxygen, a horizontal T-type incision was made extending out into the fourth interspace. The third and fourth costal cartilages were severed at their sternal attachments; the fifth had been severed by the weapon, which had coursed upward through the fourth interspace. By retracting the sternal angles (Matas), adequate exposure was acquired, and exploration revealed the pericardial sac to be markedly distended with blood flowing from a wound with each systole. There was a considerable amount of clotted and liquid blood in the anterior mediastinum which seemed to extend over into the left pleural cavity, which apparently was opened at the time of the injury. The opening in the pericardium was enlarged widely up along the sternal border and the edges of the pericardium were grasped with forceps and brought up to the wound edges so as to make the heart more accessible (Matas). Liquid blood was suctioned from the pericardial cavity and a large wound approximately 2.5 cm. in length was found in the anterior wall of the right ventricle just to the left of a descending branch of the right coronary. The heart was beating very slowly and irregularly, and profuse bleeding occurred with each systole. Due to the large size it was impossible to occlude the opening with the index finger, so the middle finger was held flatly against the opening while a black silk suture was placed through the middle of the wound about $\frac{1}{2}$ cm. from the wound margins. This suture served as a hemostatic and steadying suture, as described by Elkin. Gentle traction stopped most of the hemorrhage and brought the opening up into position for suturing. Closure of the wound was begun at the angles where there was still considerable leakage. Fine black silk on full-curved fine needles was used, and an attempt was made to place all sutures down to the endocardium, but it was probable that a few did go through into the right ventricle. Rapid ischemia and cyanosis of the myocardium were noted, apparently due to traction and tension incidental to placing the sutures, which were tied gently with

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just enough tension to approximate snugly the wound edges. Seven interrupted sutures, approximately 3 mm. apart, were necessary to close the opening. The traction suture was removed when the release of tension revealed no leakage. The closed wound was inspected repeatedly until the pericardium was partially closed. A radial pulse was perceptible immediately following the relief of cardiac tamponade, and after suture of the wound and removal of all blood clots from the pericardium the systolic pressure rose to 90 and the diastolic pressure to 70. The internal mammary vessels were transfixed in four places so as to prevent hemorrhage, which has accounted for several deaths by secondary hemorrhage. Hemostasis of the thoracic wound, which was now bleeding rather freely, was accomplished. The left pleural cavity was closed while the pericardium was closed loosely with interrupted sutures down to the inferior angle, which was left open. The chest wound was closed anatomically except for a 1 cm. opening in the lower angle which was directly above the opening in the pericardium. Forty minutes were required for the operation. At completion the pulse was 100, systolic pressure 60, and diastolic pressure 40.

Postoperative Course: The patient received 300 c.c. of plasma during the operation, and a plasma drip was maintained for 24 hours, during which time the patient's blood pressure remained in the neighborhood of 80/40. Whole blood was not available (matched) until after completion of the operation; 500 c.c. were given then and repeated within twelve hours. At the end of 24 hours, the systolic pressure was 100, diastolic 70. It remained in this neighborhood for another 24 hours, after which it rose above 100, where it remained during the entire convalescence. Serosanguineous fluid drained from the wound in rather copious amounts during the first 24 hours. This drainage decreased rapidly, and completely stopped on the fourth postoperative day, when examination of the wound revealed that it had practically closed. The wound healed by primary intention; the skin sutures were removed on the seventh postoperative day. Sulfathiazole was given more or less as prophylaxis from the second to the eleventh postoperative day, since infection is a frequent complication and accounts for a high percentage of mortality. The maximum temperature was 102°. Five hundred cubic centimeters of sterile serosanguineous fluid was aspirated from the left pleural cavity on the seventeenth postoperative day and again on the thirtieth postoperative day. Blood transfusions were given when necessary. Frequent plasma infusions and large doses of civitamic acid were given during the postoperative convalescence. Electrocardiographic tracings were made from the day of operation to the present time. The findings were typical of cardiac trauma and pericarditis (ST-1 and ST-2 shifted upward, T-1 and T-2 pointed). The follow-up has shown a gradual healing with a return to normal.

COMMENT

This case is considered unusual because of the size of the wound in a patient of fifty years. A review of the literature in which case reports are given reveals no patient of this age with recovery. Reports as to the actual size of the wound are scarce, but in those cases in which it is stated, no wound was found to be larger than in this case. Success in this case is obviously due to early diagnosis, operation, and the use of an emergency plasma bank, which already has saved many lives that previously would have been lost in severe shock. Fluoroscopy was not used because it was thought to be an unnecessary waste of time; however, as pointed out by Bigger and Elkin, it is valuable in questionable cases when diminution or absence of cardiac pulsations gives a positive diagnosis of tamponade. Roentgenographic examination holds little value because the pericardium does not dilate to a large size in acute cardiac tamponade (Bigger, Elkin, Maes). All hospitals that salvage a good proportion of heart wounds have the necessary instruments sterile at all times. We were fortunate in this instance to have an operating room ready for an emergency laparotomy. General anesthesia was used because of the probability of a collapsed left lung which could be inflated with positive pressure and to prevent any detrimental movements should the patient gain full consciousness after relief of cardiac tamponade (Elkin). Cyclopropane was used because it can be given with high oxygen content and with quick induction. The horizontal T-type (modified Spangaro) incision was chosen because the intercostal incision is time-saving and offers almost unlimited exposure by extension up and down the sternal border, as pointed out by Matas in 1907. The Elkin steadying and hemostatic suture was used instead of Beck's method because it necessitated placing only one suture instead of three and allowed the operator to hold the traction suture in the left hand while suturing with the right instead of having to depend on an assistant to hold two crossed U-sutures. In this case the

traction suture was removed because tying would have caused too much ischemia of the heart muscle. It is doubtful that perforation of the endocardium will cause any trouble or if the suture material will even come in contact with the blood if the sutures are well approximated and the serosae are in firm and perfect apposition (Matas). Rives in 1941 demonstrated this at postmortem in an auricle which had previously been sutured with through-and-through sutures. The lower angle of the wound was left open for drainage so as to prevent secondary tamponade and to allow drainage of a suppurative pericarditis should it occur. There is obviously considerable traumatic pericarditis with effusion following wounds and an operative procedure of this type. In this case it is doubtful if the wound could have been closed and the fluid allowed to absorb or drain into the left pleural cavity without a disastrous result. A drain was not used because of irritation to the pericardial and epicardial surfaces, which is more probable with the heart floating anterior in pericardial effusions of this type. With this traumatic factor and with evidence that various writers have given that drains may introduce infection, it was decided that leaving a small opening in the inferior angle was the procedure of choice. The wound healed by primary intention and was completely closed on the fourth postoperative day.

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DISCUSSION

Dr. Isidore Cohn (New Orleans): I think that this is an occasion on which we all should be grateful for this splendid presentation and also grateful that we can count on men trained at the hospital who are capable of carrying on this type of work; work which would do credit to men of much longer years of experience and training.

Also another thing to be pointed out is the value of a man having read the material as it has appeared in the recent literature so that he is prepared to carry out work as it presents.

Nothing more can be said except to congratulate Dr. Williams and the men who trained him, and congratulate the Society on having had this splendid presentation.

Dr. Gilbert C. Anderson (New Orleans): I wanted to say just what Dr. Cohn said; to congratulate Dr. Williams and to point out the fact that we have here a resident surgeon who is capable and competent of handling a case of this nature in the manner in which it should be handled. I think that speaks worlds for the training that the surgical fellows get at Charity Hospital and proves that we can offer a service and training here that cannot be surpassed anywhere in the country.

HISTAMINASE IN THE TREATMENT OF DUODENAL ULCER*

GORDON MCHARDY, M. D.†

AND

DONOVAN BROWNE, M. D.†
NEW ORLEANS

The literature concerning the many aspects of peptic ulcer management, so voluminous each year, reveals the lack of specific therapy. One new drug after another is offered; each facilitates control of one or more factors concerned, but none is sufficiently comprehensive to surface the entire defect.

A change of drug, a new method of diet-

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tic management, a different physician, each will bring about a remission in the majority of cases; this explains why the ulcer patient is such a "wanderer." Frankly, our present knowledge permits us to control acidity and to practice the "art of medicine" in individualizing our patients. The average acceptable routine is a dietary regimen of frequent feedings with proteins prominent, adequate vitamin content and supplement, acid neutralizers in preference to alkali, sedatives and antispasmodics as indicated. When the patient faithfully adheres to the well conducted medical regimen, relief is expected; when satisfactory response is not forthcoming, the physician grasps for such supplemental aid as pituitary preparations, the estrones, histidine, foreign proteins, vaccines and innumerable other parenteral injections and even x-ray therapy.

We do not permit prolonged failure with gastric ulcers, but with duodenal lesions, such a therapeutic gauntlet is permissible. With all sources exhausted, there remain refractory instances not enjoying even a cyclic period of comfort; these uncomplicated instances of duodenal ulcer create an acceptable indication for a corrective operation.

Any additional measure to avoid the morbidity of surgical interference in an uncomplicated but refractory duodenal ulcer is to be welcomed. This exists as the stimulation for continued therapeutic research.

The question arises, are these instances of duodenal ulcer of some different etiology or is some unusual factor perpetuating them? This may explain their refractory behavior. It was our earlier supposition that an associated gastritis, gastroscopically proved, was symptomatically responsible. We were, at that time (1939 and 1940), giving histaminase a therapeutic trial in gastritis. Histaminase (Tarantil T-360*) is the enzymatic product Best and McHenry isolated from body tissues which, when incubated with histamine, inactivated the lat-

ter; this, confirmed *in vitro* experimentation, has not been substantiated by *in vivo* observations. The patients improved remarkably, but the gastroscopic picture remained unchanged. With this stimulation, we selected 20 cases which fit these prerequisites:

1. Persistent symptomatology of over two years' duration.

2. Roentgenologically demonstrable duodenal ulcer.

3. Failure of previous well conducted medical therapy.

These patients were not 20 consecutive cases because:

1. Six patients were unable to continue therapy because of severe febrile reactions to the injection. Fever in each instance exceeded 104°. In two, this reaction occurred after the first injection; in the other four, it developed later in the course of therapy and seemed to be a developed sensitivity.

2. Three individuals refused to continue injections because of the severity of the local reaction.

Our regimen was:

1. A full diet without restriction, supplemented by mid-morning, mid-afternoon and bedtime milk.

2. No medication whatever.

3. Normal activity other than abstinence from smoking.

4. Histaminase (Tarantil), 4 units intramuscular every other day for 12 doses, then twice weekly for 12 doses, then once a week for 8 doses, then once monthly. We had no criteria for our selected dosage and we maintained the treatment indefinitely at monthly intervals to assure our follow-up observation.

5. An asymptomatic follow-up of eight months was considered a therapeutic success.

Our 20 cases were controlled by a group of ten duodenal ulcer patients given distilled water and 20 given oral histaminase. Of the control group, only two of the latter were asymptomatic.

Unfortunately, x-ray studies were not available in three instances after successful treatment to check the effect on the

*The drug used in this study, Tarantil T-360, was supplied by the Winthrop Chemical Company, Inc.

deformity. In two cases, the defect was roentgenologically healed; in four instances, it showed improvement; in one, it

stopped, no improvement was notable.

4. Vasodilator: A vascular disturbance at the ulcer site has been an etiologic offer-

RESULTS IN ELEVEN CASES RESPONDING TO HISTAMINASE

Case No.	Age	Sex	Gastric analysis		Gastric analysis		Onset of relief days	X-ray 8 mos. after treatment
			Before	Total	After	Total		
1	37	M	55	78	60	80	26	No x-ray
2	27	M	42	60	20	40	7	Healed
3	39	M	35	62	30	60	12	No x-ray
4	25	F	42	65	10	30	23	50% retention cleared
5	36	M	60	86	52	78	7	15% retention cleared
6	31	M	74	100	44	80	21	Defect unchanged
7	27	M	86	90	50	70	16	20% retention cleared
8	47	F	30	45	36	60	28	Defect accentuated
9	30	M	59	83	38	46	20	Healed
10	26	M	60	92	30	45	21	No x-ray
11	32	M	40	58	42	60	7	Improved

remained unchanged and in a single instance, it was roentgenologically accentuated.

This study shows that of 20 cases selected for treatment, 11, or 55 per cent, were asymptomatic after an average of four weeks' therapy and remained so in a follow-up period exceeding eight months. Three considered themselves improved, but had symptoms intermittently. In the remaining six, three accepted partial gastric resection, one expired of an operative complication and the other two are asymptomatic; the remaining three persist in typical ulcer symptoms.

Seeking an explanation for this success we reason:

1. The psychotherapy of parenteral therapy, but our study is adequately controlled.

2. Neutralization of histamine by histaminase and resultant diminution of gastric acidity. Histaminase theoretically lessens the production of hydrochloric acid in the stomach; in our cases, the reduction in acidity, while marked, was not sufficiently uniform. We must also remember the conflicting experimental evaluation of histaminase in this relationship and particularly the *in vivo* failures of the drug.

3. Foreign protein reaction: The use of foreign protein has had adequate trial in ulcer patients without significant success. Further, in the patients reacting severely and in whom treatments were necessarily

ing for some time. Certain drugs have been used for selective dilatation of the gastric vessels, but the basis for their use is too tangible for acceptance and we do not make any such claim for histaminase.

5. Allergic: It is possible that there may be an allergic basis for some ulcers; this has been predicated; if so, the neutralizing value of histaminase over histamine would be of definite significance. Nine of our patients gave a history of associated allergic manifestations; one of these, an asthmatic, was not relieved by the therapy and was benefited by partial gastric resection.

It is apparent that this work is purely a clinical evaluation of histaminase in a group of refractory duodenal ulcer cases. We are not attempting to prove specificity for the preparation nor can we establish a physiologic basis for the results obtained. We realize that our series is small, but a truly refractory duodenal ulcer case is not frequently encountered and this work represents total cases derived from a large clinic practice during a period of three years.

There are previous more enthusiastic reports on the use of histaminase in the treatment of duodenal ulcers, but the work is uncontrolled and the cases on the whole were poorly classified. As far as could be determined from a review of the literature, this is the first controlled observation on refractory duodenal ulcer cases. It is re-

grettable that we do not have a more scientific evaluation of our results.

CONCLUSIONS

1. Clinically histaminase has proved 55 per cent effective in symptomatic relief in duodenal ulcer patients refractory to all other medical measures.

2. The most plausible explanation for this therapeutic achievement appears to result from diminution of hydrochloric acid secretion or from an anti-allergic achievement.

3. This report is considered a preliminary observation which we hope may be confirmed by further and continued histaminase therapy.

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DISCUSSION

Dr. Gordon McHardy (in closing): In reference to the cases in which oral histaminase failed; in 1939 and 1940 the preparation we used was of doubtful strength and it may possibly be that ineffectiveness was due to lack of potency. However, we have not been impressed by oral histaminase when contrasted with the results with the parental preparation in a variety of conditions.

—o—

SINUSITIS IN DISEASES OF THE LOWER RESPIRATORY TRACT*

R. H. RIGGS, M. D.
SHREVEPORT

It is needless for one to dwell upon the importance of this subject, for it has been repeatedly emphasized during the past decade. In a series of papers beginning in 1919, many authors have called attention to the relation between drainage from the paranasal sinuses and certain types of pulmonary infection. Nevertheless, there are still cases going undiagnosed due to our neglect, apathy or unwillingness to make a complete examination. It is important that

we keep informed regarding the advances being made on this subject, since we are still in ignorance regarding many phases of it.

Quite extensive experimental work has been done. Associated with it are the names of Mullin, Ryder, Quinn, Meyer, McLaurin, C. Jackson, Clerf, Manges, and others.

One may ask, how can infection pass to the chest from the sinuses? There are several possible routes, namely: (1) inhalation, (2) direct extension, (3) lymphatic, (4) hematogenous, (5) lymphohematogenous.

In trying to prove the inhalation theory several methods were used. First, Mullin instilled india ink into the nostrils of rabbits. These animals were sacrificed in a few hours and the substance was found in the trachea and bronchi. Later, Quinn and Meyer in partially narcotized humans, placed a catheter in the nostrils and instilled iodized oil. X-ray plates of the chest a few hours later showed it in the tracheobronchial tree. More recently McLaurin has injected iodized oil into the antra and in 24 hours has been able to demonstrate it in the chest. Other work included bronchoscopy after tonsillectomy. In 90 per cent of patients in whom tonsillectomy was done under general anesthesia, blood was found in the trachea.

The process of direct extension is not considered seriously, except in such cases as the common cold. Here the primary focus is usually the pharynx and infection may travel up or down, or both ways by the submucosal route.

No real proof has been demonstrated as to infection going purely by the lymphatics or the blood stream, but exceptional work has been done on the lymphohematogenous route. Mullins' work here is outstanding. He injected into the antra of rabbits an emulsion of india ink and tubercle bacilli. This was done after injuring the mucosa and severing the trachea. Later at autopsy the ink and bacilli were found in the submaxillary and internal jugular lymph nodes, the larger lymph trunks, the great veins,

*Read before the sixty-third annual meeting of the Louisiana State Medical Society, New Orleans, April 29, 1942.

the right side of the heart, and thence in the pulmonary arteries and peribronchial lymph nodes.

Many chest conditions are listed by various authors in evaluating their presence along with sinus disease, namely; tracheo-bronchitis, chronic bronchitis, bronchiectasis, lung abscess, asthma, tuberculosis and others.

Some clinicians have estimated the percentage of sinus disease in these stated chest affections; for instance, Clerf states 82.4 per cent sinus infection in his series of bronchiectatic patients. Campbell says it is present 100 per cent in pneumonia. Brock and Bell report 40 per cent in 253 cases of pulmonary tuberculosis. It is found in chronic bronchitis from 30 to 60 per cent and numerous authors report its presence in asthma to be 100 per cent.

Recognition that the nasal accessory sinuses are the starting point for many cases of non-tuberculous disease in the lungs is of great importance to other physicians besides the nose and throat specialist. It is a matter of moment to the pediatrician, since sinus disease may start in early infancy. Manges points out that the sinuses drain poorly in infancy and believes that repeated pneumonia in children is almost invariably attributable to sinus infection when it is not due to an unrecognized foreign body in the lungs. The type of child who no sooner gets over one cold than he comes down with another, and who coughs with every cold, ought, decidedly to be examined for an infected sinus. The condition of children's sinuses is well shown in the x-ray picture.

It is above all important that the general practitioner should have an adequate understanding of the part played by sinus infection in broncho-pulmonary disease.

An examination at the time when an indefinite case with pulmonary symptoms presents itself, will frequently save months of ineffectual treatment. During this time the process in the lungs may progress to a stage beyond hope of cure, such as established bronchiectasis; whereas, eradication of the sinus infection earlier in this condi-

tion, in the stage of chronic bronchitis, might have saved the patient from this distressing end result.

Sinus disease is often symptomless, or practically so at the time lung changes have begun to produce symptoms. In a number of cases postnasal discharge is the only symptom that would point to the sinus, and this may be overlooked or misinterpreted. Cough, loss of weight, lassitude are prominent symptoms, and there may be fever. The manifestations thus belong to the chest rather than the head side of the picture.

A careful history of most bronchiectatic cases will usually indicate that the trouble started rather early in life and that as a child the patient had very frequent colds, indicating flare-ups of chronic sinus disease, associated with a great tendency to cough. Every case of bronchiectasis must have a very complete examination of the sinuses, including x-ray pictures.

Prevention is the best treatment of bronchiectasis and this simply means that if sinus disease is present it must be recognized early in life and unrelenting efforts made to control it.

If bronchiectasis is well developed when the patient is first seen, it is also highly necessary to clean up any sinus disease that may exist. If the sinusitis can be controlled the patient is likely to show marked improvement, even though it is not possible to relieve the dilatation that has already occurred in the bronchi.

The subject of asthma presents so many angles as to its mechanism, etiology and treatment that it is possible only to discuss certain types of the disease.

McLaurin describes a condition called "intrinsic" or "infectious" asthma. Chronic sinus disease can be demonstrated in practically every instance. Hyperplastic sinusitis with special involvement of the ethmoids is the frequent type of pathologic change. His observations are, that hyperplastic sinusitis is the rule in young adults and more advanced life, but in children spasmodic asthma is frequently the result of purulent sinusitis, especially of the antra. Ferris-Smith believes that in proper

hands many cases of asthma with co-existing sinus disease can be improved by adequate radical sinus surgery. Baum on the other hand says that the cure is only temporary and likens it to removing an urticarial wheal hoping to cure the asthma.

The conclusions of many competent men could be given and many diverse opinions would be heard. It is my belief that there are some asthma patients who will be cured for a time, anyway, by rather simple sinus operations. There are others who will not be relieved by operation, regardless of how complete it may be.

SUMMARY

I have briefly discussed the relationship of sinus disease to infection of the lungs. Originating in the "common cold" and perpetuated as a chronic sinusitis, there is established a predisposition to recurring infections of the respiratory tract. This may eventuate into a chronic chest condition.

Look for sinus disease in all infections of the lower respiratory tract, especially those not responding to ordinary treatment.

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A SILVER ANNIVERSARY

The approaching meeting of the Louisiana State Medical Society will mark the twenty-fifth anniversary of Dr. P. T. Talbot as Secretary-Treasurer of the organization, and as business manager of the New Orleans Medical and Surgical Journal. Dr. Talbot started his official connection with organized medicine as a comparatively young man and he has grown grey in the service of his much beloved medical society. During all these years Talbot has func-

tioned efficiently and with enthusiasm; he has done his job well.

In the twenty-five years of service, Talbot has come in close contact with the many Louisiana doctors who have been officers of the State Society. We know of no one who has not spoken well of him. He has been tactful and he has been gracious at all times. His primary interest has been the State Society and his interest in the organization is reflected in the willingness of others to help him in running his part of the organization. The presidents and other officers have been dependent upon him and their dependence has not been in vain. Talbot has never attempted to force policies on the organization but quietly and efficiently he has gone about doing what he has been advised to do by the House of Delegates and by the elected officers of the association.

Dr. Talbot has done well for organized medicine and its membership. The editorial staff of the Journal extends to him felicitations and congratulations on the successful completion of twenty-five years of good and faithful service.

MEDICAL MEETINGS

The recent meeting of the New Orleans Graduate Medical Assembly which came to a successful completion on March 18, indicates quite definitely that the medical profession on the whole is anxious to obtain knowledge and information concerning recent advances in medicine in all its various aspects. The attendance was absolutely an overwhelming surprise. There were approximately 1200 doctors registered, one-third of whom were medical officers, for the most part in the junior ranks. How many more physicians might have attended this meeting is a subject for conjecture because many, unable to obtain hotel accommodations, were forced to give up their anticipated attendance at the meeting. Fortunately, Dr. Daly and the Board of Administrators of the Charity Hospital saw fit to make available a very considerable number of beds so that the doctors who

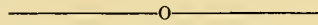
could not obtain rooms in the hotels of the city were lodged in the Charity Hospital.

One explanation of the large attendance may lie in the fact that none of the large national organizations are holding their usual yearly meetings. To supplant in part these annual conventions, smaller meetings are being held throughout the country and regional meetings in the instance of some of the national societies. The American College of Physicians, for example, will hold a regional meeting in New Orleans in April for the Fellows of the College who live in Alabama, Mississippi, Louisiana, eastern Texas and Arkansas. Already a very large number of doctors have planned to attend this meeting devoted entirely to internal medicine and it promises to be most successful.

Louisiana, together with a few other states, has decided not to hold its annual scientific session of the State Society. Judging by the attendance at the recent meeting in New Orleans, the State Society might have had a large attendance this year, but no one knows. The doctors are working harder than they have ever worked in their lives and they have no time to read and study so they do need recreation and they do need to have scientific matters presented to them briefly and concisely. These meetings that are not in the home town of the doctor would give a man a few days off from the severe trials and labors that he is now going through. We look with pride upon the local societies that have kept going, but do feel in the instance of a meeting held in the region nearby where a man is practicing that it is often impossible to attend these meetings and that calls and demands for his services will keep him away. Furthermore, it might be better for the doctor to rest these few hours rather than to go to a meeting which would consume more of his time and make certain demands upon him.

A Parish or District Medical Society meeting does not give the doctor much of a chance to rest; a meeting some distance from his home does. Just where a state medical society meeting comes in is diffi-

cult to decide. The doctors are not far enough from home to get away from the ever ubiquitous telephone calls. On the other hand, it might be that a society meeting would be restful and above everything else a change from the daily routine. It will be interesting to know what will be the decision of the House of Delegates concerning a meeting for next year.



CANCER CONTROL

During the month of April the President will, as has been his custom for several years, proclaim cancer control month throughout the country. During April the Women's Field Army of the American Society for the Control of Cancer will conduct its annual appeal for funds and for enlistment. The efforts of these women should be furthered by every physician as the doctor, better than any other person in the community, knows well the ravages of cancer. The Women's Field Army has worked seriously and effectively in educating lay groups as to the importance of recognizing early the most insidious of diseases, cancer. This organization is responsible also for the National Cancer Act which created a National Cancer Institute in Bethesda, Maryland, well known to the medical profession. On the National Advisory Cancer Council there has been one or more of the society's members serving on the Board of Directors. To further the educational program, meetings are held, literature is distributed and the word is spread throughout the length and breadth of the nation as to the dangers of cancer. Several years ago one of the local cancer committees published a book which is entitled "Youth Looks at Cancer." This book is receiving more and more attention from school authorities who appreciate that information conveyed to young minds is likely to remain there permanently, so that when the cancer age is reached these students will remember at least some of their teachings about the importance of early diagnosis of malignancies.

It is hoped that the members of the Women's Field Army, 225,000 strong, will this month of April obtain the goal of let-

ting every person in this country know that, do they have certain signs and symptoms, they should promptly and immediately consult a doctor who will make the diagnosis and take the proper steps to eradicate the disease. Their hope for attainment of this goal should receive the hearty approbation of the medical profession who know that cancer is the second highest cause of death in this country and that knowledge about cancer is the first step in its conquest.

INFLUENZA

Francis,* in the Clarence M. Jackson Lecture delivered annually at the University of Minnesota, discusses the control of epidemic influenza. He points out that notable advances have been made in the epidemiology of this disease, particularly in recognizing that it is of a virus origin. There still remain many problems in regard to the disease, not the least of which is just what should be included under diagnosis of influenza. Many physicians incorporate under the term all unidentified respiratory diseases, others include only the pandemic type of influenza which occurs from time to time. Francis defines influenza as "an epidemic disease which occurs at frequent intervals in the same geographic areas, spreads rapidly, subsides promptly and varies remarkably in extent and severity in different years."

The pathogenesis of influenza is by no means clear. The virus is transferred through a population from the respiratory tract of infected individuals to those who are susceptible. Probably in most instances there is direct infection to cause the disease. The virus attacks and destroys the ciliated columnar epithelium of the respiratory tract, largely that of the nose and the larger respiratory passages. Pneumonia by no means is a concomitant, it is present in only a minority of the patients and is a secondary phenomenon following the destruction of bronchial epithelium. In the experimental animal, when the virus is in-

troduced peritoneally, pneumonia does not occur unless enormous doses are given. Influenza is not a generalized infection; Francis states the virus has a specific localizing effect on the cells lining the respiratory tract. If these cells are protected the disease will not occur.

Immunity to influenza occurs immediately after the attack but this immunity is short lived. It seems to depend upon the restoration of the respiratory epithelium to the normal and then the individual again becomes susceptible. He points out that there are two distinct types of influenza virus, type A and type B. An attack of one type does not afford immunity to the other type, although the disease expressions are clinically and pathologically similar.

Active immunization has been obtained by various workers, but it is pointed out that while a high antibody titer may be obtainable, it is by no means positive evidence that the patient is immunized; this is explicable on the basis that the disease is essentially local. It has been found, however, that vaccination does afford a certain amount of protection but the evidence as to this is by no means conclusive. In some groups vaccination has reduced the incidence of the disease by one-third, in other groups no effects have been found to take place. Under any circumstance, immunity is but short lived. Francis suggests that it might be possible to vaccinate by the intranasal route and that this method should be thoroughly studied.

Passive immunization has been produced by transferring antibody to the experimental animal. The best results have been obtained by giving combined serum and virus by the intranasal route. Immune serum has been used as an intranasal spray in the treatment of man and if given within the first two days of illness it is definitely worth while. This method is at best a temporary expedient but it might be, if developed properly, of great value in the event of an epidemic. This method of passive immunization is still in the experimental stage.

*Francis, Thomas, Jr.: A rationale for studies in the control of epidemic influenza, *Science*, 97: 229, 1943.

In spite of the inconclusive results in the prevention of influenza, the practicing physician still has certain measures which should be followed out when a patient has the disease. Isolation and quarantine are of importance. Local disinfection of the sick room is of very little value as the human being is the chief distributor of the disease. Some of the newer methods of sterilizing the air may prove to be of great worth in the future. Used indoors a readily volatile substance such as propylene glycol may be of value. No drug has been found to act prophylactically or as being available

to make the virus inert. On the other hand, and this is the most practical feature of the whole report, it has been shown definitely that the face mask affords a barrier to prevent the dissemination of the virus. The face mask is not the ordinary gauze mask which is often actually harmful, but should be one of the newer type of masks which contain flannel filters which filter the noxious agent out of the air and which become more effective with use and with laundering. These masks protect the well wearer and the exposed individual. They very definitely should be employed in the sick room of the patient who has influenza.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

- April 1. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
Baptist Hospital, Executive Meeting, 8 p. m.
- April 5. Orleans Parish Medical Society, Board of Directors, 8 p. m.
- April 6. Eye, Ear, Nose and Throat Staff, 8 p. m.
- April 7. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Mercy Hospital Staff, 8 p. m.
- April 8. New Orleans Hospital Council.
- April 12. Orleans Parish Medical Society, Scientific Meeting, 8 p. m.
- April 14. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Touro Infirmary Staff, 8 p. m.
Women's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.
Clinico-Pathologic Conference, Marine Hospital, 7:30 p. m.
- April 15. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- April 16. I. C. R. R. Hospital Staff, 12:30 p. m.
- April 19. Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.
- April 20. Charity Hospital Medical Staff, 8 p. m.
- April 21. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.
- April 22. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
DePaul Sanitarium Staff, 8 p. m.
- April 27. Baptist Hospital Staff, 8 p. m.
- April 28. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
French Hospital Staff, 8 p. m.
Hutchinson Memorial Clinic Staff, 8 p. m.
Catholic Physicians' Guild, 8 p. m.
- April 29. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
- April 30. New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.
L. S. U. Faculty Club, 8 p. m.

During the month of March the Society held one regular scientific meeting, and one joint meeting with the New Orleans Graduate Medical Assembly. The Programs were as follows:

REGULAR SCIENTIFIC MEETING: Emergency Medical Service in Louisiana, by Dr. Eugene Countiss; Medical Aspects of Chemical Warfare Agents, by Dr. Edgar Hull; Vesicant Agent in Chemical Warfare, by Dr. J. D. Rives.

JOINT MEETING: The Dangerous Multipara, by Dr. Nicholson J. Eastman, Johns Hopkins Hospital, Baltimore; Forms and Clinical Manifestations of Myocardial Disease, by Dr. Louis Hamman, Johns Hopkins University School of Medicine, Baltimore.

Dr. H. W. Kostmayer and Dr. Roy B. Harrison recently attended the meeting of the annual Congress on Medical Education and Licensure at Chicago. Dr. Kostmayer also attended the National Conference on Medical Service at Chicago.

Dr. John H. Musser attended a meeting of the Council on Medical Education and Hospitals of the American Medical Association at Chicago, February 13.

Dr. C. P. May has been appointed chief neuro-psychiatrist for the armed forces Induction Station in New Orleans.

Dr. I. L. Robbins was guest speaker at Anshe Sfarad Synagogue on February 18.

Dr. Joseph A. Danna recently addressed the Catholic Daughters of America. Dr. Danna's subject was Man's Pathway to Eternity Through Science.

Dr. Willard R. Wirth was elected chairman of the executive committee of the Touro Infirmary staff at a recent meeting of the staff. Dr. Hilliard E. Miller was elected vice-chairman and Dr. Charles J. Bloom, secretary.

At a recent meeting of the Catholic Physicians' Guild the following physicians were elected to office to serve during 1943: Dr. Joseph Danna, president; Dr. Edwin L. Zander, vice-president; Dr. Walter J. Otis, treasurer; Dr. Theo. F. Kirn, secretary; Drs. E. L. Leckert, Daniel J. Murphy, and Wm. Harris, members of the board. Dr. Ruth Aleman was appointed as chairman of activities and Dr. Frank Chetta chairman of membership.

At a recent meeting of the DePaul Sanitarium

Staff the following physicians were re-elected to the staff: Dr. Walter J. Otis, chairman; Dr. E. M. Connely, vice-chairman; and Dr. L. J. DeBuys, secretary-treasurer. At this meeting Dr. Charles Holbrook presented a case report on Encephalitis with Psychosis and Autopsy Findings; Drs. A. V. Friedrichs, Lewis A. Golden and other members of the staff discussed this paper. Dr. C. Grenes Cole presented a paper on Autopsies. Sister Ann, superintendent of the Sanitarium, made a brief address.

Dr. William B. Clark was guest speaker at a recent meeting of the Birmingham Eye, Ear, Nose and Throat Society. Dr. Clark spoke on recent advances in industrial ophthalmology.

Dr. Howard Mahorner was guest speaker at a meeting of the Rapides Parish Medical Society at Alexandria on March 1. The title of Dr. Mahorner's presentation was Varicose Veins and Other Vascular Diseases.

Dr. Julius Lane Wilson recently attended a meeting of the board of the National Tuberculosis Association in New York.

Dr. John Adriani presented a paper on Intravenous Anesthesia at the March meeting of the Mercy Hospital Staff.

DANIEL J. MURPHY, M. D.,
Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

DR. EMMETT LEE IRWIN

Dr. Irwin, president of the Louisiana State Medical Society, was born January 3, 1893, in Clinton, Louisiana, the son of Dr. E. L. Irwin and Mrs. Irwin, nee Darling Kernan, daughter of Judge Kernan of Clinton. Dr. Irwin graduated from the Clinton High School and then went to the Chamberlain Hunt Military Academy. He obtained an A. B. degree from Louisiana State University in 1912 and then studied law. Medicine appealed to him, however, more than did the law so that he entered the Tulane Medical School, to graduate in 1917 with a degree of M. D. While he was in Louisiana

State University he enlisted in the National Guard and saw service on the border under Brigadier General, subsequently Lt. General Bullard. In 1917 he was called into active service and was made a Captain of Infantry in charge of a machine gun company. He had overseas service in France in 1918-19 and then was one of the fortunate individuals who was detached from their commands and sent to a European University for study, in this instance being the University of Edinburgh in Scotland.

On his return to this country, Dr. Irwin entered the Charity Hospital of New Orleans as an intern,

SAM HOUSTON JONES

The Annual Oration this year will be delivered by Governor Sam H. Jones. The Society is indeed fortunate in having this outstanding statesman of the Far South to give the annual address.

Governor Jones was born in Beauregard Parish, near Merryville, on July 15, 1897. He attended public school in DeRidder where he was known for his fluency in speaking and where he won many debating honors. He attended Louisiana State University shortly under two years and then left to enter the Army in the World War. He served for 17 months in the Army and then returned to DeRidder where he was Deputy Clerk in his father's office, and where at night he studied law, ultimately to be admitted to the bar in 1922.

The Governor practiced in DeRidder, and for nine years was Assistant District Attorney for the 14th Judicial District comprising five Southwest Parishes. In 1921 he was elected delegate to the State Constitutional Convention. He was at the time 24 years old and the youngest delegate in the body. In 1934 Governor Jones entered a private law firm in Lake Charles, and in that year he married his most attractive wife by whom he has had two children.

Governor Jones has been a State Commander of the American Legion and has always been most active in their affairs.

It hardly seems necessary to recount the many reforms that have been brought about during



became one of the house officers and eventually became the house surgeon in 1924-25. He was made Assistant Professor of Surgery in the Post-graduate Medical School of Tulane and subsequently Professor of Surgery of the Louisiana State Medical Center in 1931. He has been a member of the Board of Governors of the American College of Surgeons and is a member of the Orleans Parish Medical Society, the Louisiana State Medical Society, as well as the American Medical Association. Dr. Irwin was one of the active promoters and organizers of the New Orleans Graduate Medical Assembly.

Many honors have fallen to Dr. Irwin. He has been president of the Orleans Parish Medical Society, he is a member of the honorary fraternity, Phi Kappa Phi of Louisiana State University, he was chosen National Commander of Kappa Alpha fraternity, serving from 1934-40. He has been selected as one of the members of the Board of Supervisors of Louisiana State University and takes an active interest in directing the activities of this great institution.

It is obvious from this brief resumé of the curriculum vitae of Dr. Irwin that he is a man who is respected, admired and liked by his fellow physicians. He is a man of drive and force, he has made himself one of the outstanding surgeons of his state. No better man could have been selected as president of the State Medical Society in these turbulent and troubled times.



Jones' administration. He has become a leader not only of the State but of the Democratic Party in the Far South. His accomplishments as Governor have been obtained in spite of terrific political opposition. The State now is being run as a business concern, with the people of the State getting more for their money than has ever been possible heretofore. Governor Jones' term of office has been replete with accomplishments, and he will go down in the history of the State as one of our great Governors.

THE 1943 ANNUAL MEETING

This year the Annual Meeting will be confined to the business which will be brought before the House of Delegates in Baton Rouge on Monday, May 3. Headquarters will be at the Heidelberg Hotel. The program for the day is outlined below:

Registration—8:00 a. m.

House of Delegates—9:00 a. m.—Dr. Val F. Fuchs, Chairman.

Luncheon for House of Delegates—12:30 p. m.

House of Delegates—2:00 p. m.

General Meeting.

Dinner for House of Delegates—6:00 p. m.

Evening Session—7:30 p. m.—Dr. Kernan Irwin, Presiding.

Presidential Address—Dr. Emmett L. Irwin.

Annual Oration—Governor Samuel Houston Jones.

Presentation of Medal to Retiring President—Dr. Emmett L. Irwin—Dr. L. C. Chamberlain.

Introduction of New President—Dr. C. C. deGravelles.

Technical exhibits will be held in room where luncheon and dinner for the House of Delegates will take place.

Local Committee on Arrangements—Dr. Kernan Irwin, Chairman; Dr. Felix Boizelle and Dr. H. C. Hatcher.

It should be reiterated that while the meeting is primarily for the conduct of the business of the State Medical Society, the evening session will be the usual one that is held at every meeting, at which time Dr. Irwin will give his Presidential Address, the Annual Oration will be delivered by Governor Sam Jones, and the medal to the retiring President will be presented. Dr. C. C. deGravelles of New Iberia will be introduced as the new President for the coming year.

BATON ROUGE

It is indeed to be regretted that the doctors of Louisiana will not have the opportunity of viewing the tremendous changes and the new development that have occurred in Baton Rouge since the time of the last State Society Meeting which was held in this capital city of Louisiana in April, 1928, at which time Dr. A. A. Herold was President of the Society.

Since the meeting of fifteen years ago, Baton Rouge has developed into one of the most active and busy cities of the State. The University has undergone tremendous expansion, and its campus now is one of the most beautiful of any state university in this country. The University is attended by thousands of students who come not only from Louisiana but from elsewhere in the United States and from Central America. The State Capitol and the State buildings surrounding the Capitol are monuments of beauty surrounded by landscaping of the nearby area which made the Capitol center one of the beauty spots of the State. It will not be necessary to speak of the big industries that have moved to Baton Rouge nor of the various war activities that are being carried out in this section of the State.

The growth of the city has been phenomenal, and the surrounding districts of the city have reflected this growth in the innumerable lovely suburban homes that have gone up around the urban districts of Baton Rouge.

The Journal is reprinting below an historical sketch of Baton Rouge, which was published fifteen years ago. It so well summarizes this important historical city that we feel it is worth rereading.

AN HISTORICAL SKETCH OF BATON ROUGE

Baton Rouge was first seen by Robert Cavalier de LaSalle, the prince of American explorers, when he came *down* the Mississippi River in 1682 and was certainly seen by Pierre Lemoyne, Sieur d'Iberville, when he came *up* the river in 1699. Up to that time it was merely the line of demarcation between the hunting grounds of the Houmas and Bayou Goula Indians. History tells us that the chief of the Houmas was named Istrouma and for that reason the name has local interest. The name of "Baton Rouge" is pure French and means "Red Stick." Diron d'Artaguette the officer in charge of this district under the French government in the early days of the discovery, writes that on the first highland that one saw when ascending the Mississippi River, there was located a red cypress tree of such huge dimensions that if felled and made into a dug-out it would make two good sized boats. The French with their characteristic perspicacity for nomenclature called the place Baton Rouge or Red Stick, after this monster landmark so palpably plain to those passing on the river. While some historians have indulged their fancies to the extent of saying that it was due to a pole on which was hung the scalps of captives, and dyed red with blood, others that the post was painted red to make it attractive, and so on ad libitum, the fact remains that as the tree was so conspicuous it was used in aboriginal times as a boundary mark between the hunting grounds of the Houmas and Bayou Goulas, and instead of being painted as claimed (and all the pigments the Indians had in those days were

used in body ornamentation) but had been skinned or stripped of its bark, to make it prominent, for some distance above the ground after the custom of the Indians to blaze trails by gashing trees to mark the way others must follow. With their tomahawks they removed the bark and got the same effect as would have been gotten from painting. Some authorities have placed the Red Stick at the mouth of the old Garrison Bayou, Lake Grasse, now closed by the dyke in the formation of University Lake, but if we take into consideration the fact that it stood on the first highland which one saw when ascending the river, it must have stood where the State Capitol now stands. Also the height of the hill gave it eminence over the surrounding country and made it remarkable. Also how much more in the keeping of the eternal order of things is the thought that where the Indians of that period met to arrange their intertribal affairs, on the same spot meets the Legislature of Louisiana to arrange the affairs of this great State. This monarch of the forest, planted by the hand of the Great Spirit was no doubt meant to mark a spot favored by the gods of this American continent, for it stood guard over the place where the greater European nations would struggle over the mastery of the Mississippi River as being the key to American commerce, and one after another they marched and countermarched and strove to conquer and hold this spot as being the strategical solution of their sought for domination. Under eight separate and distinct flags this place, originally marked by the Red Stick of the Great Spirit, has proved in recent years to be the headwater of deepwater navigation on the Mississippi, the greatest inland seaport in the country, surrounded with all the wealth of nature lavishly supplied, and, by reason of its dominance of the great river, immune from its annual rampages. These flags were:

Fleur de lys of France—white and yellow fleur de lys—flag of Bourbons.

English Flag—crosses of St. George and St. Andrews crossed in red and white.

Flag of Spain—white flag, coat of arms of Castile.

Florida Republic—Large white star on blue field.

Flag of United States—seventeen stars and seventeen stripes.

Flag of Louisiana—sovereign State of Louisiana. Flag of United States without stars—one yellow star.

Confederate Battle Flag—stars and bars.

United States Flag—stars and stripes.

In the old days the Europeans sought to hold the river for its advantages as an artery of commerce, while in modern times it still is the greatest asset of the people of Louisiana despite its destructive periods of flood stage, caused by the fact that man has endeavored to obstruct its course and divert its channels.

BI-PARISH MEDICAL SOCIETY

The Bi-Parish Medical Society held its meeting on March 3 in the East Louisiana State Hospital after a bounteous repast prepared by the Hospital. The Society adjourned to the office of the Superintendent Dr. G. J. Smith, for its business and scientific program.

Due to the illness of the President, Dr. G. J. Smith, Vice President M. A. Walker presided. Drs. J. C. Miller, Jackson, Louisiana and Dr. J. L. Smith, of Angola, Louisiana were elected members of the Society. Drs. Walker and Smith invited the Society to be their guests in the Hospital at the Louisiana State Penitentiary at our meeting, June 2, 7:30 p. m., 1943.

Dr. E. M. Robards read an excellent paper on "Early Recognition of Schizoid Reactions," which was favorably discussed by members present.

A vote of thanks was extended to Dr. Robards for his timely paper and to the officials of the hospital for the excellent dinner given us.

The Society adjourned to meet in Angola, Louisiana, June 2, 7:30 p. m., 1943.

Signed: M. A. Walker, M. D.,

Acting President.

E. M. Toler, M. D.,

Secretary-Treasurer.

RATIONING OF PATIENTS

The attached information, covering regulations governing procedure in reference to securing certificates for additional processed foods and additional amounts of sugar, was received from War Price and Rationing Board No. 9, New Orleans.

Patients Who Need More Processed Foods

Sec. 2.5: Consumers who need more processed foods because of illness may apply for more points. (a) Any consumer whose health requires that he have more processed foods than he can get with War Ration Book Two, may apply for additional points. The application must be made, on OPA Form R-315, by the consumer himself or by someone acting for him, and may be made in person or by mail. The application can be made only to the Board for the place where the consumer lives. He must submit with his application a *written statement* of a licensed or registered physician or surgeon, showing *why he must have more processed foods, the amounts and types he needs during the next two months, and why he cannot use unrationed foods instead.* (b) If the Board finds that his health depends upon his getting more processed foods, and that he cannot use or cannot get unrationed foods, it shall issue to him one or more certificates for the number of points necessary to get the additional processed foods he needs during the next two months.

Patients Who Need More Sugar

Sec. 1407.75: Illness of consumer. Any person who, by reason of his illness, requires amounts of sugar in addition to that otherwise allowed him

may apply for a certificate authorizing him to take delivery of such additional amounts.

The application therefor shall be made to the Board upon OPA Form R-315 by the consumer personally or by an adult member of his family unit, or by an authorized agent, and shall be accompanied by a *doctor's certificate explaining why additional sugar is needed and stating the amount required*. The Board in a proper case shall grant the application.

NEWS ITEMS

Asst. Surgeon Spurgeon M. Wingo of the United States Public Health Service has been relieved from duty in New Orleans. Asst. Surgeon Bruce Cominole has been ordered to the Marine Hospital, and Past Asst. Surgeon M. M. Greenbaum and Past Asst. Surgeon H. C. Philips have been ordered to the District Coast Guard Office, 8th Naval District, New Orleans.

The Van Patten Pharmaceutical Company has issued a 40-page monograph on hypertension. This is a splendid resumé of the modern treatment of hypertension which is complete, together with an extensive bibliography. Copies of this book may be obtained from the company by addressing them at 54 West Illinois Street, Chicago.

The United China Relief, 190 Broadway, New York, announces that doctors and nurses in China's Northwest are now growing plants that produce needed drugs.

Dr. Louis A. Monte, New Orleans, Governor of the American College of Chest Physicians for Louisiana, announces that the 1943 meeting of this organization has been cancelled on account of the war conditions.

Brigadier General Hugh Morgan, United States Army, and Commander E. L. Bortz, United States Naval Reserve, spoke on the occasion of the giving of two Army-Navy "E" production awards to the pharmaceutical and biological laboratories of Sharp and Dohme.

The Executive Board of the American Public Health Association announces that the Association will sponsor a three-day Wartime Public Health Conference in New York City, October 12, 13 and 14. The 72nd Annual Business Meeting of the Association will be held in connection with it.

The Conference program will be devoted exclusively to wartime emergency problems as they affect public health and the public health profession.

The Executive Committee of NTA has announced that there will be no annual meeting of the association in 1943. This action was taken at the request of the Office of Defense Transportation. The meeting was scheduled to be held in Detroit in

June. The Board Meeting will be held, however, and according to present plans, in St. Louis, May 4-5. There will also be a meeting at this same time of the council of the American Trudeau Society and the executive and advisory committees of the National Conference of Tuberculosis Secretaries.

ANNUAL MEETINGS

Louisiana Tuberculosis Association, April 20-21. Place—New Orleans. More details in next issue.

Louisiana Conference of Social Welfare, Monroe, April 28-29-30.

Regional Welfare Conferences: Region 6—Crowley, March 12. Region 10—New Orleans, April 2.

AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians will hold a regional meeting in New Orleans, April 16-17. A distinguished group of speakers will appear on the program. Some of its speakers include Brigadier General C. C. Hillman of the Surgeon General's Office; Lieutenant Colonel H. M. Thomas, Medical Consultant, Fourth Service Command; Lieutenant Colonel Walter Bauer, Medical Consultant, Eighth Service Command; Dr. Mark F. Boyd of the International Health Division, Rockefeller Foundation; Captain B. Groesbeck, M. C., United States Navy, Naval Air Training Center; Lieutenant Commander E. L. Bortz of the Naval Hospital, Philadelphia; Dr. A. A. Blair of Fort Smith; Dr. Chauncey Leake of Galveston; Dr. M. D. Hargrove of Shreveport; Dr. Ralph Bowen of Houston; Dr. J. R. Maxfield of Dallas; Colonel L. E. Hart, Eighth Service Command, surgeon, and others. Clinics will be given by the local Fellows of the College of Physicians as well. The banquet will be held the night of Friday, April 16.

Dr. Edgar Hull is the Chairman of the local Committee that has organized the program for this meeting.

SCHOOL OF MEDICINE, LOUISIANA STATE UNIVERSITY

The Dean's office of the Louisiana State University School of Medicine announces that Franklin Bliss Snyder, Ph. D., Litt. D., LL. D., L. H. D., President of Northwestern University, Chicago, was the Commencement Speaker at the graduation exercises of the School of Medicine, which took place in New Orleans Wednesday, March 10, at 8:00 p. m., in the Municipal Auditorium. Dr. Snyder spoke on the following subject: An Incident in the History of Fort Ticonderoga.

Dr. Snyder has held the presidency of Northwestern University since September 1, 1939. His appointment to this office marked the completion of his thirtieth year of service at the University. He joined the faculty of Northwestern's College of Liberal Arts in 1909, as an instructor of English, and served in that capacity for two years. From 1911 to 1913 he held the rank of assistant professor, from 1913 to 1918 that of associate profes-

sor, and since 1918 has held the rank of professor of English.

In 1934 Dr. Snyder was appointed dean of the Graduate School by President Scott, who preceded him as President of the University. In 1947, Dr. Snyder became vice-president and dean of faculties of the University, when that office was created by the Board of Trustees.

Dr. Snyder's research in Scottish literature has won for him many honors, including election to the Society of Antiquaries of Scotland. Among his best known publications in this field are his *Life of Robert Burns*, and *Robert Burns—His Personality, His Reputation and His Art*, both acclaimed as outstanding works on Scotland's famous poet.

He is also the author or editor of several standard college texts in literature, including *A Book of English Literature* (with R. G. Martin) and *A Book of American Literature* (with E. D. Snyder), and is a frequent contributor to English journals and magazines.

Dr. Snyder, who was born in Middletown, Connecticut, July 26, 1884, received a bachelor's degree from Beloit College in 1905, a master's degree from Harvard in 1907, and a doctorate of philosophy from Harvard in 1909. He was granted the honorary degree of Doctor of Laws by Beloit in 1935.

Dr. Snyder is a member of the Modern Language Association of America, the American Association of University Professors, and Phi Beta Kappa, Sigma Chi, and Delta Sigma Rho fraternities.

CORRESPONDENCE

National Headquarters
Selective Service System
March 18, 1943

Editor-in-Chief, New Orleans Medical and
Surgical Journal
1430 Tulane Avenue
New Orleans, Louisiana

Subject: Medical Circular No. 3

Dear Doctor Musser:

Enclosed please find Medical Circular No. 3 which is self-explanatory. It is the opinion of this headquarters that this circular will be of interest to you and your readers.

As you know, the demands on the medical profession are unbelievably great and the number of doctors entering the military service very large. Since Pearl Harbor the quotas have been increasingly large, thus the number of men to be examined each month is in proportion. Under the circumstances it is impossible for the examining physicians of Selective Service to carry out the complete physical examination of all registrants.

Medical Circular No. 3 sets forth the reasons for the adoption of the system employed; it also covers the Selective Service Regulations and the List of Manifestly Disqualifying Defects, Deficiencies, Disorders and Diseases.

Selective Service is much impressed with the devotion and the patriotism of its examining physicians and dentists. As you no doubt know these professional men in Selective Service are making the preliminary examination of registrants who are to be inducted into all branches of the military service. This represents a national service of great magnitude and importance.

Publication of the circular, or portions thereof, together with an editorial on the value of the service and appreciation of the work of the medical profession, might be very worthwhile.

For The Director,
L. G. Rowntree (Colonel Med-Res.)
Chief, Medical Division.
* * * *

Editorial Comment: The Journal is very glad indeed to publish this letter emanating from Colonel L. G. Rowntree, Chief of the Medical Division of the Selective Service System. The Journal has already commented several times editorially on the last paragraph of this letter. The Journal feels very definitely that the uncompensated hours of work that the doctors who are making examinations for selective service have given to the cause of this country is of such value that it is absolutely impossible to estimate it in terms of dollars and cents. Doctors who are making these examinations have given their time freely and willingly without complaints of any kind. They have done and are doing work which is unsung and unpublicized. It is a tremendous and great contribution to the winning of this war.

Medical Circular Number 3 can not be published in toto. Suffice it to print the statement made by General Lewis B. Hershey on page one. He pointed out that this circular may be obtained from the office of Selective Service by any physician. For the information of the doctor who is not a member of the local board, appeal board, or induction board, and is not an examining physician, the information contained in the circular may be of great interest to him and it would give him information which he could convey to his patients or those people who would question him about their chances of being accepted by draft boards. General Hershey's notations are as follows:

* * * *
National Headquarters
Selective Service System
Washington, D. C.

March 1, 1943.

To: State Directors.

Local Boards.

Appeal Boards.

Medical Advisory Boards.

Examining Physicians and Dentists of Selective Service.

The purpose of this circular is to guide physicians and dentists in the preliminary physical examination of registrants *to the end that all selectees will be physically examined and processed lo-*

cally in like manner. The following pages furnish the reasons for the adoption of the present system of examination by Selective Service, the instructions covering the preliminary physical examinations, section 623.33 (revised) of the regulations, and revised List of Defects (DDS Form 220). It is hoped that each examining physician and dentist will study carefully his personal copy of the circular—familiarize himself thoroughly with the details of the examination, as well as with the lists, and then adhere rigidly to the regulations. The objective is to disqualify all registrants locally who have manifestly disqualifying defects and forward all qualified registrants to the examining and induction station.

This Medical Circular No. 3 affords the welcomed opportunity to express to the examining physicians and dentists of the Selective Service System, the appreciation of this Headquarters for their loyal and valuable professional service which has proved of the utmost importance in helping the Nation to meet its wartime needs.

Lewis B. Hershey, Director.

The Journal would like to call attention to the last paragraph, which substantiates what has been said by Colonel Rowntree in his letter and what has just been presented in the editorial comment.

THE INSTITUTE FOR MENTAL HYGIENE

The New Orleans Institute for Mental Hygiene, made possible by the generosity of Mr. Samuel Zemurray, recently dedicated their new home at 1737 Prytania Street. On the afternoon of March 25, there was open house where a reception was held in the new institution; the building was inspected by many friends of the organization. Thursday night, Rev. Thomas V. Moore, O. S. B., Professor of Psychology at the Catholic University of America, lectured in the Hutchinson Memorial Auditorium on the subject of "The Child Guidance Center and its Service to the Community." On Friday, March 26, at the same time and same place, Dr. Robert L. Sutherland, Director of the Hogg Foundation, University of Texas, spoke on "Social Gains in War Time."

INFECTIOUS DISEASES IN LOUISIANA

For the week which came to an end on February 13, the Louisiana State Department of Health in their weekly morbidity report, listed a larger number of reportable diseases than for a longer period of time. As is customary, syphilis led all the other diseases in numbers, with 260 cases. Other diseases occurring in number greater than 10 include 92 of measles, 92 of gonorrhea, 44 of chickenpox, 38 of mumps, 26 of pulmonary tuberculosis, and 11 of meningococcus meningitis. Ten of these cases of meningitis were in army camps. It is of interest to note that there were 98 cases of unclassified pneumonia, a disease which at the present moment does not have any official nomenclature,

and which is sometimes spoken of as virus pneumonia, as atypical pneumonia, or non-specific pneumonitis or whatnot. The following week ending February 20 saw 342 cases of syphilis followed by 136 of gonorrhea, 127 of measles, 50 of mumps, 27 of pulmonary tuberculosis, 21 of influenza, 18 of chancre, 12 of whooping cough, and 11 of hookworm infestation. There were 23 cases of unclassified pneumonia in this week. Two cases of typhus fever were also listed, as were five of malaria. Meningitis cases diminished to four. For the week which closed February 27, gonorrhea for the first time led all other reportable diseases with 339 listed, 266 of which cases were reported by the military authorities. Syphilis was next in number with 213 cases, followed by 99 of measles, 33 of mumps, 24 of tuberculosis, 15 of chancre, 12 of scarlet fever and influenza, and 10 of chickenpox. There were 36 cases of unclassified pneumonia this week, four of meningitis, and four of typhus fever.

The week which closed March 6 finds that the State Department of Health has changed the character of their morbidity reports. Announcement is made that from now on the venereal diseases will be reported only once a month. Of the other reportable diseases, it might be said that measles is mildly epidemic in the State as there were 178 cases reported this week, followed by 37 of mumps, 16 each of pulmonary tuberculosis and meningococcus meningitis, 11 each of scarlet fever and tuberculosis other than pulmonary, and 10 cases of chickenpox. The large number of these meningococcus meningitis cases was due to the fact that 12 cases were reported from military sources. For the week which terminated on March 13, there were listed 206 cases of measles, 56 of mumps, 24 of chickenpox, 23 of tuberculosis other than pulmonary, 13 each of pulmonary tuberculosis and meningitis, and 11 of influenza. One hundred and twenty-six cases of measles developed in the army camps of the State, as well as 55 of mumps and nine of meningitis.

NATIONAL MEDICAL CONFERENCE ON MEDICAL SERVICE

The following excerpt is from an address delivered by Dr. A. W. Adson, Rochester, Minnesota, which seems worthy of publication:

The functions of acquainting the public on matters of medical interest, assisting bureaus in formulating plans on medical care and offering constructive advice on proposed medical legislation rightfully belong to the national organization known as the American Medical Association. They could be assigned to the National Physician's Committee, or they might even be undertaken by unifying the activities of the various state committees on public policy and legislation. Representative committees could be appointed for each of the component societies, county, state, and national. These could all be so integrated that national opinion and advice could be obtained and made available for

committee hearings on legislation within a few hours' time. Through the national, state, and county committees the entire profession could be informed of proposed medical legislation. Thus, the local constituents of the respective state and federal legislators could express their views before legislation is enacted. Some states already have medical advisory committees from each county. They also have state medical committees on public policy with a physician as part-time executive chairman assisted by legal counsel. A national committee constructed on the same plan as these state committees would have to be created. A physician who has practiced medicine should be chosen as the executive chairman. Both he and his legal counsel would need to be stationed in our national capital. The expense of the national committee on public policy could be financed by one of three agencies, the American Medical Association, the National Physicians' Committee, or the respective state organizations bearing the expense jointly. It would appear more equitable if each physician would be assessed each year for the specific purpose of maintaining a national committee on public policy and legislation.

WAR CONFERENCE OF INDUSTRIAL PHYSICIANS AND SURGEONS AND HYGIENISTS

The medical, surgical and industrial hygiene experts who are so ably safeguarding the well-being of more than 20 million industrial workers have agreed to pool their knowledge and exchange their experiences regarding the many new and complex problems of today's wartime production. For this purpose their organizations—

The American Association of Industrial Physicians and Surgeons,

The American Industrial Hygiene Association, and

The National Conference of Governmental Hygienists—are combining their annual meetings in a four-day "WAR CONFERENCE" at Rochester, New York, May 24-27, 1943. Among the problems to be discussed from a practical standpoint are:

The mass entry of women into industry;

Older-age employees, with their various associated problems; proper placement and employability consideration of the 4F rejectees;

Rehabilitation and proper employment of those already discharged from the military services because of disabling conditions;

Toxic and other hazards from new substances, new processes, and the use of substitute materials;

Absenteeism, fatigue; nutrition;

Effects of long hours; double shifts; two-job workers; overtime; increased industrial accident rates;

Advances in the treatment of illnesses and injuries, and many others.

This joint meeting will be a report on the state of the nation, by the men who know, in matters

of industrial health. Dr. William A. Sawyer, Medical Director of Eastman Kodak, is General Chairman; Dr. James H. Sterner and Lieut. Comm. J. J. Bloomfield are arranging the programs for the industrial hygienists.

Physicians and surgeons, hygienists, engineers, nurses, executives—all who are interested in the problems of industrial health and their solution—are invited to attend as many of the sessions as they can arrange for; no registration fee is required.

The Fourth International Assembly of the International College of Surgeons will be held on June 14, 15 and 16 at the Waldorf Astoria Hotel in New York City, it is announced by Dr. Fred H. Albee, International President. The program which will be devoted to war surgery and rehabilitation will no doubt be followed with great interest throughout the nation and elsewhere not only by those directly connected with medicine, but also by the lay public as well.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The general oral and pathological examinations (Part II) for all candidates will be conducted at Pittsburgh, Pennsylvania, by the entire Board from Thursday, May 20, through Tuesday, May 26, 1943. The Hotel Schenley in Pittsburgh will be the headquarters for the Board, and formal notice of the exact time of each candidate's examination will be sent him several weeks in advance of the examination dates. Hotel reservations may be made by writing direct to the Hotel.

DR. JOSEPH BENJAMIN THOMPSON (1874-1943)

Dr. Joseph Benjamin Thompson, Bogalusa, was born in Philadelphia, Mississippi, March 2, 1874. He received his M. D. degree from the University of South in 1905, and located and practiced in Washington Parish from 1905 to date of his death. He died on January 6, 1943.

DR. GEORGE S. BROWN (1867-1943)

Dr. George S. Brown of New Orleans died on Saturday, March 20, after a comparatively short illness. Dr. Brown for many years was a member of the State Medical Society. He was, in his active days, one of the best known physicians in the City of New Orleans. He graduated from Tulane from the School of Pharmacy, and 15 years afterwards obtained the Degree of Doctor of Medicine. He was for many years a member of the State Board of Pharmacy, and at one time was professor of materia medica at Tulane. He was a pioneer worker in the field of tuberculosis, and was one of the active members of Miss Kate Gordon's Anti-Tuberculosis League which he helped

organize some 30 years ago. He was on the staff of the institution up to the time of his death.

The following tribute to the memory of Dr. Brown is republished from the *Times-Picayune*. It is illustrative of the respect and admiration which Dr. Brown was able to inculcate in his friends and patients.

"In the passing of Dr. George S. Brown our community has lost one of its most useful workers in the cause of tuberculosis control, and the poor and those ill in mind and body, a strong champion. With his passing, another break appears in the ranks of the pioneer tuberculosis workers of our city and it will not be mended, for such workers as Dr. Brown take with them when they go, as they brought with them when they came, something rare, original and ir retrievable. Their work is immortal, an ideal and challenge to those who follow, but the intimate touch, the fine clear stamp of personality is missing. Dr. Brown possessed an able mind balanced by a deep and warm interest in humanity. His creed was kindness and he gave in word and deed and expression full measure of his kindliness. He was kind, never from policy but because kindness was the soul of him. As a clinician of the Orleans Anti-Tuberculosis League Clinic he will be mourned by many of his patients to whom it was always "Dr. Brown's clinic, Dr. Brown's medicine, Dr. Brown's hospital." For these he never forgot to "keep a voice that shall speak at all times the thoughts of a strong heart" and so for many years he heartened the weak and ill. He has left them now and may they be comforted in remembering."

"Thou hast the best that heaven itself

Can give thee, rest.

Rest from all wearying thoughts and things.

How many a poor one's blessing

Followed thee beneath that low green tent

Whose curtain never outward swings."

Mary I. Doherty.

DR. ALBERT JOHNSON NEWMAN

(1880-1943)

Dr. Newman died on the morning of March 27, after a short illness, as result of meningococcus meningitis.

Dr. Newman was born in Amite County, Mississippi, subsequently settled in Hammond, Louisiana, where for many years he was city health officer. He practiced medicine in St. Helena and Tangipahoa parishes for thirty-eight years and for twenty-two years in the city of Hammond. He was always active in organized medicine and at one time was president of the Florida Parish Medical Society. He was also a member of the American Medical Association, Masonic Lodge, the Order of the Eastern Star and the Woodmen of the World. He was active in the affairs of the Baptist Church. Surviving Dr. Newman are his widow, three sons, three daughters and five grandchildren.

DR. J. HOLMES SMITH

(1883-1943)

Dr. Smith died, after a few weeks' illness, March 27, as a result of a cerebral neoplasm.

Dr. Smith graduated from the University of Maryland in 1905 and came to New Orleans a few years later, to practice his profession. He was a member of the State Medical Society and the American Medical Association since 1921. For over twenty years he was one of the teachers at Tulane University and during this period of time he conducted regularly and efficiently one of the medical out-patient clinics at Charity Hospital.

The death of Dr. Smith will leave a void which will be hard to fill. He was an enthusiastic teacher and those students with whom he came in contact benefited and profited materially by that which he gave them. He was always an attentive and sincere practitioner of medicine. He gave to his patients his skill, his time and affection. In every respect he was a splendid doctor. His friends will mourn with his wife and children the demise of this splendid character.

WOMAN'S AUXILIARY

THE STATE CONVENTION

The biggest News-Of-The-Month so far as Auxiliary members are concerned pertains to the annual convention. And it is not very good news, for there will be no convention in the grand manner of the past as we have known them in Louisiana. But it is all very fitting and proper, for everything in the grand manner is "out" as long as the world is in such turmoil and distress.

There will be no meeting of the Auxiliary as a whole. The Executive Board will meet at 10:00 a. m., May 3, in the Law Building Auditorium on the L. S. U. Campus. All Auxiliary members will be welcome to attend this Board meeting, also the luncheon that will follow in the faculty club at 1:00 p. m., and the afternoon session of the Board which will follow the luncheon. Auxiliary members may take part in Board proceedings as they will automatically become members of the Board. Following the afternoon session there will be a tea in honor of the new President, Mrs. George Taquino, at the home of Mrs. Cecil Lorio in Dalrymple Drive. The Medical Society has invited the Auxiliary members to attend their meeting at seven-thirty in the evening.

Transportation to the Law Building will be furnished by the Baton Rouge Auxiliary, which is a very gracious gesture in this time of gasoline rationing. In fact, since jotting down the plans for this one day it looks as though there will be many attractive and interesting items crowded into a short space of time, and as though the Baton Rouge members are going to be delightful hostesses, war or no war.

Here is a very important request made by Mrs. Arthur David Long, of Baton Rouge, General Convention Chairman. Because of food rationing it will be necessary for each person who plans to attend the meeting to notify Mrs. Long, at 1367 Steele Blvd., Baton Rouge, by April 15, of such intention. This is absolutely necessary in order that sufficient food may be provided. So, if you do not want to be on "the outside, looking in," at that luncheon, drop Mrs. Long a card before April 15.

Mrs. Clarence B. Erickson, State President, asks that all officers and committee chairmen send their annual reports, in duplicate, to her at 432 Herndon St., Shreveport, by April 10.

For the benefit of those who read as they run—and nearly every one is running these days—here is the convention data at a glance:

April 10

Officers and committee chairmen have reports in duplicate in hands of Mrs. Erickson.

April 15

Every one who plans to attend convention have notice of such intention in hands of Mrs. Arthur David Long, Jr., 1367 Steele Boulevard, Baton Rouge.

May 3

8:30 a. m.—Registration, Lobby of Heidelberg Hotel, Baton Rouge.

10:00 a. m.—Executive Board meeting (all Auxiliary members participating) Law Building Auditorium, L. S. U. Campus.

1:00 p. m.—Buffet luncheon (for all who have notified Mrs. Long) Faculty Club.

2:30 p. m.—Executive Board Meeting—Law Building—All Auxiliary members participating.

4:00 p. m.—Tea, honoring Mrs. George Taquino, at home of Mrs. Cecil Lorio, Dalrymple Drive.

7:30 p. m.—Open Meeting of Medical Society—Heidelberg Hotel. Transportation to meetings on Campus and tea, furnished by Baton Rouge Auxiliary.

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News from the Auxiliaries this month is brief. The Baton Rouge group was hostess to Mrs. Erickson on March 12 when she met with them to plan for the convention.

Mrs. MacHenry of Monroe sent in an interesting report of the March meeting of her Auxiliary when a good program and lovely luncheon were enjoyed.

The Orleans Parish group was hostess to wives of doctors from over the country who attended the Graduate Medical Assembly. Doctors' wives all over the State are busy with Red Cross, A. W. V. S., U. S. O and other forms of war work.

BOOK REVIEWS

Treatment of Fractures: By Guy A. Caldwell, M. D., F. A. C. S. New York, Paul B. Hoeber, Inc., 1943. Pp. 303 illus. Price, \$5.00.

The author's experience in the handling of fractures as well as in teaching medical students, interns and residents has more than amply qualified him to prepare this work. His long experience and continued interest in the care of compound fractures and war wounds as well as research carried out on the use of sulfonamides for the prevention and treatment of infections in compound fractures particularly enhance the value of the work.

This book has been written to meet the needs of the medical student, intern, resident, practitioner, and the military surgeon at war. Because so many different methods and gadgets have been described in the literature it is impossible for the average physician to know the method of choice in a given case. The author has selected and presented the simple and proved methods for use in the case at hand. Methods of traction as well as methods for reduction and splinting of simple and compound fractures and dislocations are clearly illustrated with line drawings.

Specific injuries are presented under their respective chapters in a clear cut manner so that

even the beginner will have no difficulty in determining the best method to choose in a given case.

An unusual and valuable feature of the book is the manner in which compound fractures are presented. In addition to a chapter on the consideration of compound fractures in general, there is a special section on compound fractures for each bone.

The latest developments in chemotherapy and the results of all actual experience in war wounds in this war to date have been incorporated into the book.

Medical students, practitioners and military surgeons interested in fractures will find in this book a concise presentation of the best principles and latest developments in the treatment of fractures.

RUFUS H. ALLDREDGE, M. D.

Synopsis of Pathology: By W. A. D. Anderson, M.A., M.D. St. Louis, C. V. Mosby Company, 1942. Pp. 661, illus., p. 1. Price, \$6.00.

This book is one of the series of synopsis of various subjects written by authorities in each of their respective fields. The purpose of this book is not to discuss completely any of the sub-

jects which are included in this series, but to discuss them briefly.

It is pointed out by the author that the complexity of the subject of pathology as related to biochemistry, physiology, bacteriology and other disease processes makes mandatory the publication of such a synopsis for general use.

Presentation of the subject matter is very concise and the descriptions are very clear. In places, the description of the disease processes is limited to a single sentence or paragraph. The purpose of these short descriptions is to present the less frequent disease or pathological changes so as to make the book more complete. The subject matter is adequately supplemented with excellent photographs, the clarity of which are equal to any which the reviewer has seen in any other similar publication. In addition to the black and white photographs there are numerous excellent color plates, but the quality of the color plates does not quite equal that of the black and white photographs.

The descriptions and discussions presented are supplemented by a bibliography which supplement the brief accounts given here.

This book cannot be considered a complete text of pathology and it was not intended that it should be. The main value will be in recalling to mind the essential part of any description of the pathological disease under discussion. For more adequate discussion and descriptions recourse to more complete work, is necessary. However, this book should serve as an adjunct to the usual pathology text books.

ALFRED B. LONGACRE, M. D.

Medical Parasitology: By James T. Culbertson. New York, Columbia University Press, 1942. Pp. 285. Price, \$4.25.

With the increased recognition of the significance and practical importance of parasitic organisms in the rôle of human disease-producing agents, it is understandable that there should be new publications in this field. "Medical Parasitology" provides information on animal parasites for use in medical schools. The author states that its aim is practical and that the zoological aspects of the subject have been restricted.

After a brief Introduction, Part I, entitled "General Considerations," presents an admirable orientation on infection, epidemiology, natural resistance and acquired immunity, diagnosis, specific therapy and prophylaxis. These chapters stimulate interest in the subject matter presented in Part II, infections caused by animal parasites. This second part includes seven chapters in protozoa, four on helminths and two on arthropods. Following this in-

formation there is an appendix on technical methods, a brief bibliography and a subject index.

The data are logically presented and in several instances are summarized in tabular form. There are 21 plates of photographs and sixteen figures. The former are poorly arranged and in some instances poorly selected. The line figures are uniformly bad. In some instances they convey ideas contrary to present-day knowledge, as Fig. 5, page 123, which completely ignores the cumulative knowledge on the exoerythrocytic phase of the malaria parasites. The accompanying text on the opposite page (p. 122), last sentence, is equally inaccurate. Unfortunately there are numerous errors of this type in basic information.

In evaluating the clinical aspects of the subject there is evidence that the author has made a serious attempt to coordinate a considerable amount of scattered data. It is equally evident that this aspect of the subject is relatively unfamiliar to the author, else he would not have recommended intramuscular injection of tartar emetic (Table IV, page 56, unnumbered). Moreover, the inclusion of several atypical case reports detracts from the value of the presentation.

The subject of medical parasitology is highly technical and is difficult to present in a form which can readily be utilized by the medical student. It is unfortunate that the volume under consideration fails to meet the test of dependable practical use.

E. C. FAUST, PH. D.

PUBLICATIONS RECEIVED

The Williams & Wilkins Company, Baltimore: Obstetrical Practice, by Alfred C. Beck, M. D.

Lea & Febiger, Philadelphia: Diseases of the Nose, Throat and Ear, by William Lincoln Ballenger, M. D., F. A. C. S. and Howard Charles Ballenger, M. D., F. A. C. S.

W. B. Saunders Company, Philadelphia and London: Burns, Shock, Wound Healing and Vascular Injuries, prepared under the auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Clinical Diagnosis by Laboratory Methods, by James Campbell Todd, Ph. B., M. D. and Arthur Hawley Sanford, A. M., M. D. The Principles and Practice of Obstetrics, by Joseph B. DeLee, A. M., M. D. and J. P. Greenhill, B. S., M. D.

The Livingston Press, Livingston, New York: Rehabilitation of the Tuberculous, by H. A. Pattison, M. D., F. A. C. P.

American Medical Association, Chicago: Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1941.

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VESICANT CHEMICAL WARFARE AGENTS*

J. D. RIVES, M. D.†
NEW ORLEANS

The chemical warfare agents, usually called the vesicant or blister gases, have as their primary toxic action irritation of the skin and mucous membranes. Those that have proved effective are not gases but volatile liquids and derive a large part of their tactical value from the fact that, due to their physical state, they may remain and continue to produce casualties in a populated area for hours or weeks, depending on the conditions of weather and terrain.

These substances may be distributed over an area by shell fire, aerial bombing, or by spraying from low-flying aircraft. The last method would be by far the most effective one if weather and anti-aircraft defenses should permit.

The objectives of attack on the civilian population by chemical agents would be to damage morale, create panic, force evacuation, produce casualties, disorganize industry, and break lines of communication and transport. The "vesicant gases," due to their persistency, would be particularly effective in forcing evacuation of vital industrial areas for extended periods and in disrupting lines of communication and transport. They would also be of great value in contaminating water and food supplies.

Only two substances in this class, mustard gas and lewisite, have proved effective

in the field up to this time, but there can be no reasonable doubt that others are ready for use. Indeed, we have already been officially informed that by judicious tinkering with the molecule of mustard gas a group of substances called nitrogen mustards have been developed that vary in their physical properties from very light liquids, five times as volatile as mustard gas, to solids with low melting points, and that their toxicological properties are essentially similar to those of their prototype.

Mustard gas, a German invention, is B B'—dichloro-diethyl sulfide, $(\text{ClCH}_2\text{CH}_2)_2\text{S}$. It is an oily liquid which freezes at 14°C . (57°F .), boils at 228°C . (442.4°F .), and is similar in appearance to used cylinder oil. It vaporizes readily at ordinary temperatures, giving off an odor similar to that of mustard or horseradish, and its vapor density (5.4) is such that the vapor is also actively vesicant. It will persist in an area from five days to three weeks in ordinary weather (much longer in very cold weather). It hydrolyzes slowly but leaves no toxic products behind.

Lewisite, an American contribution, is bis-chlorovinyl-dichlorarsine $(\text{ClCH}:\text{CHAsCl}_2)$. It is also an oily liquid, does not freeze at ordinary temperatures, boils at 190°C ., and is therefore a better winter gas than mustard. It has an odor similar to that of geraniums and its vapor (density 7.1) is actively vesicant. It will persist in an area for from 24 hours to one week in ordinary weather. It hydrolyzes readily but the products of this hydrolysis are arsenical substances that are also vesicant and may remain in the area for an indefinite period unless washed away by rain.

*Read before the Orleans Parish Medical Society, March 8, 1943.

†From the Department of Surgery, Louisiana State University School of Medicine, New Orleans.

All of the vesicant agents have the property of penetrating any porous material such as fabrics, felts, leather, unglazed brick, and wood. They also penetrate rubber though quite slowly.

The essential difference between mustard gas and lewisite lies in the fact that whereas the products of decomposition of mustard gas are harmless those of lewisite are arsenicals that are not only vesicant agents but also systemic poisons. The nitrogen mustards, likewise, hydrolyze rather readily, as does lewisite, and the products of hydrolysis are also toxic.

In general, it may be stated that the differences between the various known vesicant agents are far less marked and less important than are their similarities. Since it is extremely likely that in any attack these agents will be used in mixtures and that their odors will be masked to make detection difficult, it is safest and least confusing to think of them as a group rather than as individuals.

TOXIC ACTION

The damage produced by these agents is a function of the concentration of the agent and the duration of the exposure. Thus, exposure for a short time to a light concentration of the vapor will cause no damage at all, whereas a splash of the liquid left on the skin until it is absorbed will produce massive necrosis before a blister can form. Exposures to various concentrations and for various times may produce all degrees of injury between these extremes.

LATENT PERIOD

All of the vesicant agents have a latent period between the exposure and the development of symptoms. This latent period is relatively short when the exposure is severe, and long when the exposure is slight. It varies from fifteen minutes after severe exposure to lewisite to six hours after slight exposure to mustard gas. This fact adds greatly to the tactical value of the agents, for the victims may not realize that they have been gassed until it is too late for the effective use of prophylactic measures.

ABSORPTION

All of these substances are rapidly absorbed by animal tissues and after the lapse of five minutes they have penetrated so deeply that little is to be gained by attempts to remove or neutralize them. This does not apply, of course, to such part of the agent as may remain in the victim's clothing.

SUSCEPTIBILITY OF TISSUES

The severity of the effect of the vesicants on various tissues varies very widely. The eye is most susceptible, the skin second, and the upper respiratory tract third. It is probable that the respiratory tract would be more readily injured than the skin if it received equal exposure but since only the vapor is usually inspired less damage is done to the respiratory tract than to the skin, which is exposed to spray, droplets, and splashes.

PATHOLOGY

The skin: The lesions produced on the skin may vary from a simple erythema to deep necrosis. The typical effect resembles a second degree burn, being a vesicle surrounded by an area of erythema. Splashes or large drops may produce a gray slough surrounded by an annular vesicle. Deep necrosis may also occur under the vesicles, for the action of the chemical may progress for as long as three days. This necrosis may extend down to the fascia. The pathological process is quite similar to that seen in the thermal and chemical burns that we see in civil practice except for the tendency to progress for hours or days. The thin skin on the neck and that in the folds of the axilla, the scrotum, and the vulva is especially susceptible. Absorption of arsenic from lewisite may produce arsenic poisoning. The deep burns are very slow to heal and are peculiarly susceptible to infection.

The respiratory tract: The lesions produced in the upper respiratory tract are entirely similar to those seen in the skin. The larynx and trachea are usually the worst sufferers and the bronchioles and vesicles commonly escape injury. Severe exposure of the respiratory tract may cause a violent laryngitis and tracheitis which in

some instances may be ulcerative. Bronchopneumonia is a common sequel, due to secondary infection, and is the chief cause of death from vesicant agents. There is no sound evidence that either tuberculosis or bronchiectasis are sequelae.

The eyes: The eyes are more susceptible to injury than are other exposed tissues. Concentrations of vapor insufficient to produce skin burns may affect the conjunctiva and the cornea. The damage may be divided into three grades:

1. Hyperemia and edema of the conjunctiva, with little or no corneal reaction.
2. Severe hyperemia and edema of conjunctiva, with roughening of cornea and some loss of epithelium. All damage superficial to Bowman's membrane. A mild iritis may develop, and miosis is usually a feature.
3. Severe injury to both cornea and conjunctiva. The conjunctiva may appear white at first, due to coagulation, but extreme edema and congestion follow, and some necrosis may develop later. The superficial layers of the cornea are destroyed and the damage may extend through all layers. In such cases, perforations of the eye may ultimately occur. Miosis occurs regularly and iritis is severe. Some degree of permanent scarring of the cornea is almost invariable in this group. This very violent type of reaction seldom if ever results from exposure to the vapor alone. It is usually the result of the liquid itself splashing or spraying into the eye.

In the last war the British found that 75 per cent of the eye injuries were in the first group, 15 per cent in the second, and 10 per cent in the third.

Systemic effects: The vesicant agents produce no systemic effects except after very severe exposure. Arsenical agents such as lewisite may produce arsenical poisoning under such circumstances but it is unlikely that this will be seen often. Severe exposure to the nitrogen mustards produces, in experimental animals who survive for several days, a leukopenia which may progress to an agranulocytosis. The red blood cells are not damaged. Massive doses produce severe damage to the bone marrow

which may progress to complete destruction of the blood-forming elements before death occurs. In such cases a hemorrhagic necrosis of the basal ganglia may also take place if death is long delayed.

It should be remembered that the above systemic effects occur only after massive doses far greater than are likely to be experienced under field conditions. The danger to life from the vesicant agents is not great and is due almost entirely to secondary infection of the lesions rather than to the local or systemic effects of the chemical agents per se.

SYMPTOMS

There is nothing specific about the symptoms produced by the "blister gases." Any experienced physician could predict the symptoms from the pathologic effects enumerated above. Pain is somewhat less severe than would result from comparable lesions produced by flame or steam. Severe exposures that produce extensive skin lesions result in the development of surgical shock but this is likely to be somewhat less severe in proportion to the area involved than would result from a thermal burn. Fever is slight unless secondary infection develops. It must be kept constantly in mind that neither the signs nor the symptoms appear until an hour or more after the exposure.

PROPHYLAXIS AND FIRST AID

Prophylaxis is the best treatment and this should include both prevention of contamination and first aid. "The best first aid is self aid." Those persons not required to be outdoors in the protective services should stay inside with the doors and windows closed to avoid the liquid agents. They should go upstairs if possible to avoid the concentrated vapor, which, being heavy, clings to the ground and rarely reaches an effective concentration as high as the second floor. Above all, they should avoid cellars, ditches, and other areas below the surface of the ground, for in such places the gases tend to collect and remain for long periods. If these precautions are observed, gas masks and protective clothing are unnecessary.

Those who are caught outdoors without masks or protective clothing should observe the same precautions that they would in a heavy rain. Hats, umbrellas, raincoats, and overshoes will not protect the individual completely nor for a very long period but they will minimize the amount of contamination and thus prevent anything more serious than a severe sunburn, in most instances. If the individual has eyeglasses, he should by all means put them on, and if the chemical is being distributed from airplanes he must, above all things, curb his curiosity and not look up. Drops of the liquid agent in the eyes are far more dangerous than is the vapor. A wet handkerchief over the face gives considerable protection from droplets. He should lose no time in getting under a roof if one is nearby. If he can get into a closed house, so much the better, but he should leave all contaminated clothing outside, preferably in a covered garbage can. He should then wash himself thoroughly with running water and laundry soap. The eyes should be freely flushed with plain tap water or a 2 per cent solution of bicarbonate of soda. If the soda solution is not already made up and readily available, it is much better to use plain water, for if the agent is not washed from the eyes in five minutes it is absorbed and the damage is done. After five minutes no irrigation should be used at all, for more harm than good will result. Similarly, it is better to wash the skin with water and laundry soap at once than to use the best chemical antidote five minutes later. Water and alkalies such as laundry soap will remove or destroy any of these agents if used promptly and must be considered the most valuable of all antidotes because of their availability and universal applicability. There are somewhat better specific chemical antidotes for both mustard gas and lewisite, but in most instances the individual will not know what gas has been used in time to select a specific antidote even if it were readily available, which is exceedingly unlikely to be the case.

Those in the protective services will be provided with protective clothing and gas masks. These gas masks will protect against

all known vesicant agents. The protective clothing will protect for a considerable time against any ordinary concentration of the gases. These individuals will probably also be provided with a special protective ointment and other chemical neutralizing compounds and will be specially trained in their use.

If a gas raid should occur, it seems obvious that every able-bodied citizen must take care of himself, for no organized decontaminating program can be carried out within the critical five minutes, and also any attempt at mass decontamination would cause many panicky persons to rush into the streets and thus contaminate themselves still more during the time that could more profitably be spent in their own bathrooms. Riots would probably take place at the decontaminating stations, making it impossible to care for those who were unable to take care of themselves.

Persons who were injured during a raid would not be able to take care of themselves so special provision must be made for them. It must be borne in mind that most of these individuals would inevitably be burned to some extent for it would not be possible to reach them within five minutes after the exposure. When they were reached, however, all excess liquid should be removed or neutralized and all contaminated clothing removed in order to prevent further damage that would be done to the victims themselves or to other persons with whom they might come in contact. If a contaminated individual should be carried into a casualty station or a hospital this would result in the "gassing" of attendants and other casualties as well. Stretcher squads and ambulance teams as well as cleansing stations will probably be equipped with a special protective ointment which will protect against both mustard gas and lewisite. This ointment neutralizes mustard gas but protects only temporarily against lewisite and the nitrogen mustards, so it should be washed off as soon as the opportunity presents itself. Cleansing stations will be provided to carry out complete decontamination of casualties. They will use spe-

cific neutralizing agents followed by soap and water. The most effective neutralizing agents for mustard gas are the various hypochlorites such as bleaching powder, "hychorite," or Dakin's solution. They will also irritate the skin and must themselves be washed off, so are not well suited for use by stretcher teams. The best neutralizing agents for lewisite are the peroxides, such as hydrogen peroxide. Alkalies, including alkaline laundry soaps, are effective against all known vesicant agents. A 10 per cent solution of sodium hydroxide in glycerine is highly recommended but glycerine is scarce at present.

It is extremely important to remember that none of these neutralizing agents should ever be used in the eye. This warning applies to hydrogen peroxide, which is recommended for eye irrigation in one of the early Civilian Defense manuals. If a liquid agent has entered the eye and the patient is seen within five minutes, the eye should be freely but not forcefully irrigated with plain water or a 2 per cent solution of sodium bicarbonate. After five minutes, no irrigation of any kind should be used.

When contamination is caused by vapor alone there is nothing to remove, for the agent has already been absorbed; consequently, there is no first aid problem involved.

TREATMENT

The treatment of injuries caused by the vesicant gases, like their pathology, is non-specific, but a few points deserve mention.

The eyes: Irrigations for eye injuries were, until recently, highly recommended, but later observations have shown that better results are obtained without them. Eye pain is best relieved by eye drops of neosynephrin hydrochloride and pontocaine, as follows:

Neosynephrin hydrochloride 1% solution.....	4.
Pontocaine hydrochloride	.04
Saturated solution of boric acid.....	12.

Holocaine 1 per cent or butyn 2 per cent are also satisfactory. Cocaine must never be used, for it tends to aggravate the drying of the cornea that is caused by the gas. Atropine sulphate, 1 per cent, should be instilled into the eye every hour until effective mydriasis is produced and the instillation should be repeated once daily until the eye has recovered. Dark glasses should be worn but bandages are not recommended. The lids should be lubricated with a bland ophthalmic ointment or liquid petrolatum (sterile). If the injury is severe, an ophthalmologist should be consulted if possible. The treatment is not specific and a competent ophthalmologist, even without special knowledge of gas injuries, will know how to handle the problem after he has seen the deep corneal injury and the associated iritis. It should be constantly kept in mind that lesions due to the vesicant agents are extremely susceptible to infection and consequently a meticulous observance of asepsis is necessary in the treatment of lesions of the eye as well as in other locations.

The skin: Extensive skin and mucous membrane lesions may be associated with severe surgical shock. This condition should be treated first. Local treatment should be delayed until shock has been controlled. The treatment of shock consists primarily in three things: first, relief of pain; second, conservation of body heat; and third, the administration of fluids. The best method of administering fluids is by intravenous infusion, and the best fluid is human plasma but whole blood is quite satisfactory and saline or glucose solutions will serve well when plasma or blood is not available. The skin lesions should be treated as if they were thermal burns, except that coagulants should not be used in the local treatment because it is desirable that toxic products of hydrolysis of lewisite and of the nitrogen mustards be permitted to flow out with the exudate rather than be absorbed. Pontocaine compound ointment (N.N.R.)

is useful for relief of pain.* The blisters should be drained or removed unless it is certain that lewisite has not been used, but it should be done under strict aseptic precautions. If conditions are not satisfactory for such technic, it is probably best to leave the blisters intact until the patient can be moved to an operating room where proper debridement can be done. Any aseptic local treatment may then be applied except one which involves coagulants. The recently developed sulfa-film would probably serve admirably, for secondary infection is the greatest danger.

Respiratory tract: The pontocaine-neosynephrin drops used for the eye also serve admirably to allay pain and edema in the nasal passages. Steam inhalations are of great value for the irritation of the larynx and trachea. Codeine is useful for the cough. Expectorants are contraindicated in the acute stage. Oxygen therapy should be used for dyspnea resulting from pulmonary edema and under exceptional circumstances tracheotomy may be required for edema of the glottis. From the second day on, bronchopneumonia is likely to develop and should be treated in the usual way. This complication should be far less deadly now than in 1917-18 because of the introduction of the sulfonamides in its treatment. One should bear in mind that some of the vesicants tend to cause agranulocytosis and that the sulfonamides share that tendency.

Gastrointestinal tract: Nausea and vomiting may occur, due to swallowing the chemical agent. This is usually temporary and may be relieved to some extent by the oral administration of sodium bicarbonate solution. If hematemesis and diarrhea with abdominal pain occur, the treatment is symptomatic. It should be remembered that under such circumstances the toxic agent has already been absorbed and

nothing is to be gained by attempts to remove or neutralize it.

Nervous system: Massive doses of the nitrogen mustards produce flaccid paralysis in animals, but it is unlikely that human beings will ever receive such doses under field conditions. There is no known treatment for this condition, but if respiratory paralysis occurs artificial respiration or the Drinker respirator would be worthy of trial.

Hemopoietic system: The agranulocytosis that occurs in experimental animals after massive doses of the nitrogen mustards does not respond to pentnucleotide. Transfusions of whole blood and of red bone marrow should be tried. Nothing is known about the results of such treatment in human beings.

SUMMARY

This account of the vesicant agents no doubt seems a very gloomy picture because it has been necessary for me to dwell chiefly on the most serious phases of the problem. It should be remembered that:

1. There is nothing magical about the action of the blister gases. They are irritant chemicals whose effect is slight or severe in proportion to the amount of the substance that comes in contact with the victim and to the duration of the exposure. Even a very large amount of the chemical agent if removed immediately does very little damage.

2. Civilians not in the protective services do not have to stay outdoors during or after a gas attack, and if they do not, very few will be seriously injured.

3. Those who can stay in closed buildings do not need gas masks or protective clothing.

4. Those who are exposed to the gases can prevent serious damage by very simple measures that can be carried out in any home.

5. In any given gas attack, if reasonable precautions are observed only a small number of persons will be burned, and

*The fluid in the vesicles caused by lewisite is itself an active vesicant, so great care should be exercised by attendants to prevent further injury to the patient as well as to themselves, when this fluid is removed.

only a small portion of those burned will be seriously injured.

6. Of those who were gassed in the last war, only 3 per cent died; this is less than 10 per cent of the mortality in injuries by shell fire or other explosives.

7. The lesions that are caused by the blister gases are not very different from those caused by fire, smoke, and steam and are susceptible to similar treatment.

8. The late effects of gassing have been greatly exaggerated. The actual late effects are entirely comparable to those that result from burns.

9. Severe systemic poisoning has been seen only in experimental animals subjected to massive doses not likely to be duplicated in the field.

10. The greatest danger to civilians from gas attacks is the development of panic. People rarely become panicky about things they understand. Therefore, civilians should be fully informed about the facts of gas warfare, with the chief emphasis placed on the methods of self protection.

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SOME MEDICAL ASPECTS OF CHEMICAL WARFARE AGENTS*

EDGAR HULL, M. D.†
NEW ORLEANS

If explosive and incendiary agents are excluded from the list, the tactical uses of chemical warfare agents are three-fold: for production of harrassment, for the causing of casualties, and for screening purposes. The harrassing agents are those which produce irritation of the eyes and upper portion of the respiratory tract. The casualty-producing agents, which so far have proved effective in war, are of two types, so far as their injurious effects are concerned. One type, called the lung irritants, induces inflammation of the respiratory tract; the other, known as the vesicants, causes inflammation and blistering of the skin, and

inflammation of the eyes and the upper portion of the respiratory tract. The screening agents are those which upon exposure to air yield dense opaque smokes which conceal the maneuvers of troops, ships and planes from the eyes of the enemy.

Although the agents of chemical warfare are usually spoken of as gases, they may exist in their natural states as solids or liquids as well, and may be disseminated as solid in the form of dusts, as liquids in the form of sprays, or as gases. Liquids or solids may be vaporized by heat for purposes of dissemination. In World War I shells were the principal means for the dissemination of chemical agents, but if these agents are used in the present war, bombs or sprays from low-flying airplanes would more likely be used.

In the field, chemical agents have been used both for defensive and offensive purposes. For purposes of offense the gases and dusts, which remain in harrassing or irritating concentration for short periods of time only, were used; while for defense, and for protection of the flanks of advancing battalions, vesicant liquids, which persist in irritating concentrations for days or weeks, were employed.

Chemical agents thus far have not been used against civilian populations. If they should be used, it would appear most likely that persistent irritant liquids would be employed, for the purpose of disrupting morale, interrupting defense work, and for the production not only of immediate but also of remote casualties. To me, personally, it seems that civilian communities would have to be utterly defenseless or taken completely by surprise for chemical agents effectively to be disseminated by airplanes; and in such an event it is likely that more destruction could be wrought by explosives and incendiaries. Chemical agents might be effective if used by saboteurs, but again fire and explosion would appear to be more effective. There is also a possibility that systemic poisons might be introduced into water supplies and food, but hardly probable that this could be accomplished on a wide scale. Definitely, the greatest danger

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attending the use of any chemical agent by our enemies would be the production of panic; if this can be avoided the danger is small.

It is well, however, for physicians to know something of the effects of the chemical warfare agents, to be able to recognize cases of poisoning by them, and to be capable of applying general principles of medical treatment to persons injured by these agents. I now propose to discuss briefly these aspects of the harrassing gases, screening agents, and lung irritants, and the possibilities for new and improved chemical agents of destruction. The vesicant liquids, most important of the chemical warfare agents, will be discussed by the other essayist of the evening.

THE LACRIMATORS

The lacrimators, or tear gases, cause smarting of the eyes, lacrimation, and nasal discharge. Although they produce intolerable discomfort, they do not produce actual injury in concentrations which are obtainable even in closed places. These agents are not particularly useful in warfare, their principal uses being in the dispersal of mobs and in driving criminals from cover. The principal tear gases are brombenzylcyanide and chloracetophenone. The first of these in its natural state is a powder, the second a liquid. Both are disseminated from cartridges which contain smokeless powder; the heat from combustion of the powder vaporizes them.

THE STERNUTATORS

The sternutators are dusts which cause sneezing, coughing, burning in the throat, severe headache due to blockage of the paranasal sinuses, and sometimes nausea and vomiting. Although they cause extreme distress, no actual injury ensues. These agents were very effective when first used in World War I, because they traversed the canisters of the early gas masks, which were not equipped with mechanical filters. The principal sternutators were adamsite and "sneeze gas," both arsenical compounds. Arsenic poisoning did not result from their inhalation. Treatment consists

of the use of opiates to reduce distress, and of sprays which cause shrinking of the nasal mucosa.

THE SCREENING SMOKES

The screening smokes are not used with the intention of producing casualties, but they may cause burns if one is near the site of their emission. There is also the possibility that casualty-producing gases may be disseminated in the smoke, so that persons who know the smokes to be innocuous may be deceived.

The principal screening smoke consists of very small particles of white phosphorus which ignite spontaneously in the air. Particles of phosphorus produce severe burns when they come in contact with the body. Visible particles should be removed with forceps; if many particles are present, the burned region should be covered with wet cloths until they can be removed. It is recommended that then a 20 per cent solution of copper sulphate in glycerine, with 5 per cent starch, be applied to the burned area, or that it be covered with a powder composed of heavy magnesium oxide 10 per cent, borax 5 per cent, and sodium bicarbonate 85 per cent.

The other smokes consist mostly of strong acids which cloud on hydrolysis as they come in contact with the moisture in the air. The smokes themselves are harmless, but may cause lacrimation and running of the nose. Contact with particles of the liquids, will, of course, produce burns.

THE LUNG IRRITANTS

The most effective lung irritant of the last war was phosgene, which chemically is COCl_2 , carbonyl chloride. Chlorine, which has similar effects, failed as a warfare agent because of its light weight and therefore its lack of persistency. Phosgene is a colorless gas, about three and a half times as heavy as air. Irritating concentrations persist less than half an hour out of doors. In the respiratory passages, and principally in the bronchioles and alveoli, it incites inflammation and edema of varying degrees.

Usually no symptoms appear at the time of inhalation of phosgene, but after a latent

period of several hours, up to 24, there develop cough and thoracic pain. No further symptoms may develop, and the cough may persist for only a few hours. In severe cases of phosgene poisoning, dyspnea and cyanosis appear, moist and wheezing rales are heard in the lungs, and marked engorgement of the neck veins and suffusion of the face occur. In very severe cases the blue cyanosis is supplanted by an ashen gray color, the previously distended veins collapse, the pulse becomes rapid and feeble, and death may occur within a few hours. Nearly all persons who have significant lung irritation develop bronchopneumonia which may be fatal after a few days. If recovery occurs, it is nearly always complete; rarely bronchitis, emphysema, and fibrosis may follow as permanent sequelae. The mortality of phosgene poisoning is not high, but the outlook in cases which reach the cyanotic stage is always uncertain. It should be emphasized that severely poisoned persons may feel perfectly well for as long as 24 hours after exposure, the only symptom being an unpleasant taste to cigarette smoke.

Treatment of phosgene poisoning: Persons exposed to this gas should be put to bed at once and remain there for 24 hours, regardless of how well they feel. If cough or chest pain occurs, they should be moved to a hospital as soon as possible, and oxygen therapy instituted. If oxygen is not available, the windows of the room should be widely opened. A semi-sitting position is advisable, especially if dyspnea occurs. If deep cyanosis occurs, and the neck veins become distended, bleeding is recommended. Morphine is to be given for restlessness. Aminophyllin may be given intravenously if asthma-like wheezing is present. If the gray stage with collapsed veins and feeble pulse is reached, plasma transfusions may be of value, but a fatal outcome is to be expected in such a case.

After the acute asphyxial stage has passed, it is advisable to give one of the sulfonamide drugs as a prophylactic against pneumonia.

THE POSSIBILITY OF NEW CHEMICAL WARFARE AGENTS

It is certain that extensive search has been made for more effective war gases, both by our enemies and ourselves, and almost certain that if chemical warfare is employed, new agents will be introduced. Agents with multiple actions are undoubtedly being sought. Perhaps the introduction of systemic poisons which are more persistent than the ones formerly employed is the greatest danger to be anticipated. Among such possible agents may be listed compounds of the heavy metals, carbonyl compounds, alkaloidal substances, and cyanide combinations or mixtures.

It is also certain, however, that it will never be possible to destroy great armies with chemical agents, nor to wipe out the populations of cities. At most, the use of new agents will create but a temporary tactical advantage. As stated previously, in their panic potential lies the greatest danger if gases are ever used against our civilian population.

I hope that the field is now cleared of the dusts and smokes and irritants, in preparation for the dissemination of knowledge regarding the vesicant liquids—the subject of the essayist who follows me on the program.

SOME OF THE THINGS THE GENERAL PRACTITIONER SHOULD KNOW ABOUT THE ELECTROCARDIOGRAM

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The electrocardiogram is being used more and more as time goes on. This is as it should be, for it is of great value in the diagnosis of heart disease; but as happens with all new instruments of examination, there are many mistakes made in the interpretation of the curves. People are made unhappy and their activities restricted unnecessarily by the lack of knowledge of just what the electrocardiogram means to the individual patient. A great clinician said many years ago that the stethoscope at that time had done more harm than good. There was probably some truth in this, but now

we consider it indispensable in our work. Those who have been in practice 25 years or more can remember the early mistakes in x-ray diagnosis that brought sorrow and financial loss to the patient and his family. Happily this is not true today, and radiology has come into its own and needs no defense. The blood pressure instrument also has had its victims; now the electrocardiogram is taking its toll.

The physician's job is to relieve suffering, whether it be organic disease or the fear of disease. Let us all do our utmost to create no new fears.

Every person who has heart disease does not need an electrocardiogram, but no patient can be said to have had a thorough examination unless an electrocardiogram is made. People with large hearts, with congestive failure caused by old rheumatic valvular disease or hypertension, or cases of luetic heart disease with wide open aortic regurgitation with congestive failure, do not need electrocardiograms unless there is some irregularity of the heart that is not understood from the clinical examination.

It must be remembered that a normal electrocardiogram does not eliminate the possibility of heart disease. Cases of angina pectoris are frequently seen in which the electrocardiogram is normal, and normal curves have been noted a few hours before coronary occlusion and even when the patient was in pain. Furthermore, the electrocardiogram is of little help in prognosis. It should be considered only as a part of the examination, and balanced with the history, physical findings and in some cases, x-ray, blood count, and so on.

It is a mistake to accept minor changes in the electrocardiogram as proof of heart disease and so inform the patient, thereby running the risk of starting a neurosis that may take months or years to overcome. Patients are sometimes told that they have heart disease, when the opinion is based on an electrocardiogram that, according to our present standards, is within normal variations. Such an error may play havoc with the peace of mind of both the individual and his family.

There is a tendency on the part of some practitioners to depend too much on the electrocardiogram and to neglect the clinical picture. The training of one who reads the curves is of vital importance. This holds true of course in all branches of medicine; but a graph of some kind seems to carry more weight at times than a statement concerning physical findings.

Occasionally curves are seen that are definitely abnormal, especially in the electrocardiogram of people in middle or later life. These abnormalities are caused by some small lesion in the conducting system. They are too small to affect the function of the heart, and since they are not progressive, do not affect the well being of the individual. Puzzled by some vague symptom, if the physician grasps this as proof of clinical heart disease and passes this diagnosis on to his patient with restrictions and treatment, he may do more harm than good. Persons in this group should be classed as subclinical. In other words, the trouble is below the clinical horizon and needs no treatment other than sensible living and moderation in all things. Some will develop clinical heart disease and die; others will develop clinical heart disease and live out their lives; still others will live into old age without showing any clinical signs of heart disease, the electrocardiogram remaining constantly abnormal. The prognosis in these cases will depend on the clinical picture.

Those who read electrocardiograms should determine whether the patient has taken digitalis or quinidine in the near past. More than three weeks are required in some cases, for the effect of digitalis to disappear. The physician should know whether the patient has smoked just before the making of the curve. The position of the patient, whether sitting or lying down should be noted.

No attempt is made here to point out the type of case in which the electrocardiogram is of great value, but a few are mentioned as a warning against some of the pitfalls in its use.

THE ELECTROCARDIOGRAM IN LATE LIFE

A 59 year old farmer with no cardiac symptoms was examined in March, 1941. A complete physical examination was negative, although the electrocardiogram was definitely abnormal. The T waves were inverted in all chest leads; flat in Lead I; upright in Leads II and III. If this man had presented symptoms that could have been considered as due to heart disease and his physician had ordered an electrocardiogram, the curve would have shown definite evidence of myocardial disease and the patient would probably would have been restricted in his activities unnecessarily. In the absence of physical findings, no treatment or restrictions were advised and at the end of two years he still remains well and at work. This case brings out the fact that persons in middle life can present definitely abnormal electrocardiograms, and go happily on their way without symptoms.

UN SOUND RELIANCE ON ONE ELECTROCARDIOGRAM

The error is sometimes made by depending on one electrocardiogram, as in the following instance. A 56 year old man was seen in February, 1939, complaining of having suffered in the previous three days three attacks of severe pain across the front of the chest and radiating into each arm. The attacks developed while the patient was at rest and one attack lasted nearly three hours. He was examined about 12 hours after the last attack. The man felt a little weak, but otherwise made no complaint, had no fever and no leukocytosis. The findings of the physical examination were essentially negative and the electrocardiogram was entirely normal. The patient continued to feel well, but four days later the electrocardiogram was definitely abnormal. It was not typical of myocardial infarction but showed that something had happened to the myocardium. A diagnosis of myocardial infarct was made. The patient rested for a month and then returned to his work, having had no more cardiac symptoms. He died two years later from other causes. Autopsy showed that he had had a small infarct. There might easily have been some question about the diagno-

sis in this case if only one electrocardiogram had been made.

If the patient has an abnormal electrocardiogram and has atypical symptoms, one should be careful not to consider the symptoms due to clinical heart disease merely because the electrocardiogram happens to be abnormal. In 1928, I examined a 61 year old woman who suffered precordial pain but gave a rather vague description of pain which was not associated with exercise. She also complained of shortness of breath and swelling of the lower extremities. The electrocardiogram showed complete left bundle branch block. The clinical picture here presented might well lead to a diagnosis of heart disease with congestive failure. The electrocardiogram was certainly abnormal, but the physical examination was essentially negative. On careful study it was found that the shortness of breath, of which she complained, was sighing respiration. The swelling of the lower extremities was found to be due to varicose veins. The chest pains were not typical of angina; there was no valvular disease and the blood pressure was normal. There was no history of hypertension and the heart was normal in size. The electrocardiogram was the only real evidence of heart disease. After 15 years she is working part time. She has a few of her old symptoms but complains much less than when first seen. The electrocardiogram still shows bundle branch block. She recently walked 70 city blocks without distress. This is certainly not bad for a 76 year old woman.

One can see that this patient's symptoms might have been misinterpreted and the electrocardiogram could have been used as positive proof of serious myocardial disease. She evidently had some disease of the myocardium involving the conducting system, but it was not progressive and it has caused her little trouble in the last 15 years. This case is mentioned to show that even in the presence of an abnormal electrocardiogram, symptoms are not necessarily due to heart disease unless they are typical. In other words, the changes in the myocardium may be so slight that they do not dis-

turb the function of the heart even though they change the electrocardiogram.

On another occasion a man 61 years old was examined whose findings were essentially negative, except that he was overweight. The electrocardiogram was exactly like that of the woman just mentioned, but the man presented a typical angina of effort. He lived only a little over four years from the time he was first seen, and died from heart disease. The electrocardiogram in these two cases looked just alike; each was definitely abnormal. The clinical picture was the differentiating factor.

NEED OF CORRELATING CLINICAL FINDINGS WITH ELECTROCARDIOGRAM

To give another instance of the prime necessity for the correlation of clinical findings with the electrocardiogram in making the diagnosis, the following case is cited. In 1936 I examined a 22 year old male office worker. He was large, well developed and healthy looking, but gave a history of attacks of fast beating of the heart. He had been examined by several doctors and no signs of heart disease had been found. The electrocardiogram showed a peculiar type of curve: short PR interval—wide QRS complexes. This type of electrocardiogram is typical of what is known as the Wolf-Parkinson and White syndrome, and is generally considered not to be evidence of heart disease, most of these patients suffering from attacks of paroxysmal tachycardia. Following this original electrocardiogram, the report had gone back to the physician that the electrocardiogram showed myocardial disease. The patient and his family had been advised accordingly and a great deal of alarm and distress had been created as to the patient's future. On examination, this young man showed no evidence of heart disease. The electrocardiogram was at times abnormal, at times normal. Any one who reads electrocardiograms should know of this condition, as a great deal of harm can be done when a mistaken diagnosis of serious heart disease is made. The young man is now an officer in the U. S. Navy.

This case brings out the fact that it is unwise to make a diagnosis of disease of

the heart in the young, when no significant physical findings are discovered in a thorough examination. In rare cases this is not true, notably in rheumatic fever and acute infections, such as diphtheria. Under these circumstances, the changes in the electrocardiogram may be the only evidence of cardiac involvement.

When a physician sends a young patient for an electrocardiogram, and he receives a report that the electrocardiogram shows definite evidence of myocardial disease, he should review the case thoroughly. When there is no enlargement of the heart and no significant murmur can be heard, he should be slow in making a diagnosis of organic disease. There are exceptions, however, as in the case of small children.

An eight year old girl was examined some time ago whose complaints were irritability, poor appetite, failure to gain weight and an occasional rise in temperature above the normal. There were no joint symptoms. Physical examination was negative except for a faint systolic murmur heard in the apex. This kind of murmur is frequently heard when the heart is sound, but the electrocardiogram in this girl showed the first stages of A-V block with wide and slurred QRS complexes, and thus a diagnosis of active rheumatic fever was made.

SPURIOUS HEART DISEASE

Richard Cabot in his book "Facts on the Heart" states that most heart disease is imaginary; that 14 out of 18 successive patients sent to him by physicians for supposed heart disease had, in his opinion, perfectly sound hearts. This was written 16 years ago and it is almost the experience of those who pay special attention to cardiac disease today. In my experience, the percentage would not be so high, but it is too high for the good of all concerned.

People with neurocirculatory asthenia, with palpitation, dyspnea, chest pains, or some insignificant murmur, make up a large percentage of the mistaken diagnoses then, as they do now. If these patients are sent for an electrocardiogram and too much is read into it, this report going to the phy-

sician or patient makes a bad matter worse. Patients present themselves for examination who, in my opinion, have no heart disease. They come bringing with them one or more electrocardiograms with reports written in plain English "evidence of myocardial disease." It is a grave mistake for doctors to put reports of this kind into the hands of patients. One can see how serious this would be in the case of some nervous individual who has no heart disease, even though the report might indicate that he has. As a rule people are more frightened by a diagnosis of heart disease than any other ailment. In a few weeks' course on electrocardiography, it is impossible to learn enough to be competent to make proper evaluations. Time and study are required for this.

SUMMARY

It is not the aim of this paper to belittle the electrocardiogram, but rather to emphasize some of its limitations. It is of great aid when properly evaluated, and in any case, where the status of the heart is in question, the patient should be given the benefit of it, but with a clear understanding that it is only a part of the examination.

THE PROBLEM OF INDUSTRIAL HYGIENE*

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The health of the man behind the machine makes all the difference in the world to the man behind the gun.

Industrial hygiene is concerned with every phase of the health of the man behind the machine, whether it is the industrial dust in the air he breathes or the food his wife has packed in his dinner pail. In short, it is the problem of keeping the worker on the job, and in good health, so that he can work at top efficiency.

Prior to the war great strides had already been made in our concept of indus-

trial hygiene and in our application of new knowledge. Realizing that the health of the worker is influenced both by his working environment and by many outside factors, we had broadened our scope of usefulness in the field of industrial health and maintenance. Progressive leaders in management and in industrial hygiene began giving their attention to such influencing factors as housing, mental health, improved nutrition, and the provision of medical care. Moreover, it was not a very difficult matter for management to bring and keep under control hazardous conditions in the working environment itself, as attested by our decrease in occupational accidents and in many of the occupational diseases. Industry was beginning to abandon the use of many toxic materials such as benzol and other solvents, toxic metals such as radium and mercury, and hazardous processes such as the use of sand as an abrasive blast-cleaning material.

In so far as living conditions went, no very serious problem existed, since industrial communities were developed leisurely as the needs arose. With no restrictions on tires and gasoline, it was a simple matter to travel long distances to work at those factories not adjacent to ample housing facilities.

This does not mean, of course, that we had solved all of our problems in industrial hygiene before the war. In fact, one of the real advances we had made was to secure a clear definition of the national problem through careful studies made by the Public Health Service in cooperation with state health departments. These surveys showed widespread potential hazards from accidents and occupational diseases, meager facilities for their control, and even scantier provisions of industrial medical services. The problem of the small plant was especially troublesome. And the lack of teaching facilities in industrial medicine was a real problem.

Even in normal times the amount of time lost by workers in this country from various types of disability amounted to the astounding total of more than 400,000,000

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days a year. Today, of course, with our larger labor force and with the many hazards associated with war production, this figure is closer to a half billion man days lost from disability alone. However, those of us who had been associated with this work over the last twenty years realized that great strides had been made and were being made in the improvement of the working environment. Perhaps the most significant advance was the establishment of governmental industrial hygiene services to assist industry, labor, and the professions in a number of states.

The present war has changed the entire picture in such a revolutionary manner that our previous problems now appear to be slight by comparison. In a mechanized war we have many new industrial problems. The success with which we meet them affects the lives and the success of our fighting forces.

The industrial hygiene problem in total war involves not only the working environment—the machines and conditions of work—but also the composition of the labor force itself, and in addition to that, the home and community environment of the worker. All of these problems and the success with which we meet them determine the health and efficiency of the worker on the job.

The first and most important task of industrial hygiene is the maintenance of a safe and healthful working environment. Toward that end, we must foresee exposure to many kinds of hazards and we must be prepared to eliminate or control such hazards. The foundation of industrial hygiene work, then, is constant research into the causes of occupational diseases and injuries and the development of control measures.

In our research we must determine the toxicity of substances such as explosives, solvents, and other chemicals, metals used in airplane and munitions construction, and components of synthetic rubbers and plastics.

We must develop instruments for the detection and measurement of toxic dusts, fumes and gases. The problem of fatigue

in relation to hours and types of work is a problem constantly demanding attention. The protection of human beings under crowded working and living conditions is another angle which industrial hygiene is bound to consider.

Just as swift-moving events in our variegated warfare change the kinds of weapons used in combat, so circumstances change our problems on the home front. Shortages and priorities, for example, have put new solvents of unknown toxicity on the market. Old materials, such as benzol and carbon tetrachloride, have come into greater usage.

One company, for instance, had gradually restricted the use of benzol to the point where none was used in their plants. Recently, their industrial hygienists found that benzol was being used in a new process for polishing reflectors. The present operations personnel, never having had any experience with benzol, were surprised to learn that it was a toxic substance. A few trial runs showed that a solvent naphtha could easily be substituted. They have since improved the properties of the compound used, proving that production gains may sometimes be made by investigating hazardous materials.

In many cases, benzol is replacing the less toxic toluene which is being used as a starter in the manufacture of TNT. Our engineers have just completed a survey on benzol, indicating its hazards, industries wherein they exist, and standard methods of control which can be applied in any size plant.

We are now studying a mixture essentially of benzol and toluene, containing in addition a small percentage of other aliphatic and aromatic hydrocarbons. It has been advocated as a substitute for toluene, with the claim that with this mixture the toxicity of benzol is attenuated to such an extent that it is not liable to cause chronic benzol poisoning. In order to protect the health of workers handling these materials, it appeared imperative to check on the validity of this claim, because it is contradictory to past experience.

Increasingly large quantities of chlorinated solvents such as carbon tetrachloride and trichlorethylene are being used in vapor degreasing of metal parts. Control of these vapors in most degreasing tanks has in the past been accomplished by condensation methods. Now we frequently find that the production pace has been stepped up so high that cooling coils cannot be kept below the temperature required for satisfactory condensation. Consequently, workroom air is contaminated. If additional cooling capacity cannot be provided, use of local exhaust ventilation and, if possible, enclosure of the process are recommended.

Recently, in one plant it was found that small percentages of trichlorethylene would serve as well as the more dangerous carbon tetrachloride—another example of new production gains through investigation of dangerous materials.

Lead tetraethyl is being used in the lower grades of gasoline to increase the octane rating of motor fuel. This would not be very important if it were not for the fact that these gasolines have been used throughout many plants for various washing purposes. This means that the men get their hands, and sometimes portions of their bodies, in contact with gasoline which now contains an extremely toxic lead compound which can be absorbed through the skin.

Gasoline containing tetraethyl lead has been widely used in stoves in trailer camps where large numbers of industrial workers live. Unless this practice is eliminated, serious injuries may develop wherever trailer camps are located. In Maryland the authorities have conferred with representatives of the oil industry, and lead-free gasoline is now available to trailer residents who have been warned of the danger.

Certain metals used in airplane and munitions construction constitute various health hazards. For example, the demand for mercury, used in the manufacture of munitions and precision instruments, has resulted in reopening old quicksilver mines, where operations have begun without installing the equipment necessary to prevent

dissemination of mercury vapor and dust.

Metal spraying operations expose operators to hazards from metal fumes of all kinds, including lead. Such operations should be performed only in booths equipped with proper exhaust ventilation.

Alloys of unknown or implied industrial hygiene significance, and toxic metals, such as cadmium, are replacing aluminum and chromium. Control of possible fumes or vapors is indicated in these cases.

Tellurium, which has known toxic properties, is being used for special steel alloys. If toxic concentrations of tellurium are detected; control can probably best be secured by local exhaust ventilation.

Among the studies under way on the toxicity and potential dangers of the heavy metals and their compounds are those on beryllium, vanadium, and molybdenum. These metals are becoming increasingly important because of the unusual mechanical properties of some of their alloys. These studies were undertaken because sufficient data were not available for an evaluation of permissible concentrations.

The silicosis hazard associated with abrasive blasting operations is increasing in magnitude since it has become necessary in both new and old installations to return to the use of silica sand as an abrasive instead of steel shot or grit. However, the sand blaster can be protected if properly designed and well maintained equipment is used.

The substitution of silicon carbide cutting instruments for those of steel, as well as the replacement of cutting and milling with abrasive grinding processes, introduces new dust hazards which may be detrimental to the health and will certainly affect production adversely.

The enormous demand for precision instruments in war production has reintroduced the threat of radium poisoning among luminous dial painter, as occurred during World War I. This problem is made especially difficult by the sub-contracting system which has spread the work among many small shops in many states, without leaving any central source of information

as to the location of these industries. Recently, the National Bureau of Standards has issued a Handbook (H27), setting forth in considerable detail the precautions to be taken in the safe handling of radioactive luminous compounds. The significant point is that radium dial painting can be done safely, if industries are aware of the danger and follow standard precautions.

One of the serious industrial hygiene problems is control of the hazards resulting from the electric welding arc. The production drive has multiplied its use many times without multiplying the supply of protective equipment.

The hazards of the electric welding arc are many. Burns, electrical or from molten metal, may occur. The effects of ultraviolet radiations from the flash of the arc are dangerous. Oxides of nitrogen fixed by the arc may cause severe and even fatal poisoning. Metal fume fever may result from breathing certain metallic oxide fumes produced when welding galvanized iron. There is the danger of exposure to carbon monoxide and other products of incomplete combustion from the coating of the welding rod. We are also familiar with the possibility of lead poisoning when painted parts are to be welded or cut, and with the ill effects of fluorides when welding stainless steel.

Effective methods for the control of all these hazards are known, but their application has been "too late and not enough" in many instances. While it is true that the supply of protective and control equipment has not kept pace with the demand in some cases, other means for securing protection could have been devised. Frequently, insufficient measures have been taken to shield the arc and protect other workers in the vicinity from welding flash, or to remove toxic gases and fumes by local exhaust ventilation.

The tremendous acceleration in industry is reflected by an exaggeration of old familiar dermatoses problems. The search for substitutes for priority materials has led to new cutaneous exposures. These sub-

stitutes may expose not only industrial workers, but the Armed Forces and the civilian population who use products made from these substitutes.

Dermatitis is the chief industrial hazard in munitions plants. Most of the explosives such as TNT, DNT, tetryl, ammonium picrate, and fulminate of mercury, belong to the class of compounds known as skin sensitizers. By this is meant that certain individuals having cutaneous exposure to these compounds develop a specific hypersensitivity, following an incubation period of several days or longer, after which they develop dermatitis whenever they have cutaneous exposure to the specific compound. Among the explosives, tetryl is the most powerful sensitizer, the percentage of workers affected being estimated at anywhere from 10 to 30 per cent. The degree of cutaneous exposure necessary to induce hypersensitivity does not bear any relationship to safe toxic limits for systemic exposure.

The control of dermatoses from explosives resolves itself into reducing the cutaneous exposure of workmen to these compounds by the use of protective clothing, protective ointments, and attention to personal environmental cleanliness. Our Dermatoses Investigations Section has developed special clothing, ointments, and cleansers for this purpose.

In the manufacture of airplanes, skin hazards encountered are in the degreasing solvents and compounds, cutting oils, paint and "dope," and electroplating baths.

The solvents which are used in degreasing metal parts and as paint and "dope" thinners often cause dryness and fissuring of the exposed skin due to loss of the natural oil and fat extracted by these compounds. Degreasing tanks and mechanical cleansing equipment, as well as protective clothing, will remove this hazard.

Metal plating and other rust-proofing processes are carried on in airplane plants, furnishing potential skin hazards from alkaline cleansing and degreasing baths, acid baths, and solutions in the plating tanks themselves. The Division of Industrial Hygiene has devised special venting apparatus

for plating tanks, which, in addition to protective clothing and ointments, largely removes the skin hazards in these processes.

Cutting oils are another skin hazard. The mechanization of modern armies calls for the production of much mechanical equipment, which involves considerable metal work, a large part of which necessitates milling and machining. The use of cutting oils is essential to these operations, and the machinists have a certain amount of unavoidable exposure to these oils. A certain percentage of these machinists develop comedones, folliculitis, acne, boils, and sometimes, eczemas of those skin areas exposed to the oils. Wounds from steel cuttings may afford portals of entry for infection. It is not the bacteria in cutting oils which cause these conditions, but rather bacteria on the skin and dirty clothes. Therefore, we do not advocate the addition of disinfectants to cutting oils. Environmental and personal cleanliness, protective clothing when necessary, and filtration of the cutting oils to remove the steel cuttings are the principal measures for preventing cutting oil dermatitis.

Recently we have encountered a new form of cutting oil dermatitis. The lesions are not only of a different character, but the face and neck are frequently involved, which is not usual in the ordinary type of cutting oil dermatitis. This problem is now under investigation, but present indications are that eruptions of this type are associated with the organic chlorine compound content of certain cutting oils.

One industrial problem which deserves special attention with the increase in the horsepower of airplane motors, is the problem of excessive noise. High sound intensities long continued may cause deafness. In the past, the testing of motors was kept to a 90 decibel level or lower. But with airplane motors of 2000 horsepower and upwards, the test rooms may have noise levels from 120 to 140 decibels, even though scientific methods of sound deadening have been adopted.

One solution is the installation of sound deadening baffles about the pipes and mo-

tor on a hinged arrangement, allowing for ready access to all parts of this equipment. Sound deadening ear plugs could be used. One company whose employees are exposed to high levels of sound gives special physical examinations to detect injury before it becomes serious.

Industrial hygiene, like war production, is concerned with men and women as well as with machines and materials. Hence, the manpower problem is closely related with the industrial hygiene problem.

The labor force today has an almost totally new character. It is larger than ever before. More women are among its ranks. It consists of many old, many young inexperienced, and many handicapped workers. The needs of our Armed Forces, the geographical location of war industries, the uneven distribution of war contracts, priorities, and conversion have all created dislocations and shortages of labor.

At the end of 1942, we had 57,000,000 workers—18 million in direct war production. At the close of 1943 we will have about 38 million in war activities, including the Armed Forces. About 25 million will be engaged in civilian production. Of this huge industrial and military force of 63 million, 20 million will be women; and of this 20 million, 6 million will be engaged in war work.

The fact that women constitute such a large proportion of the labor force presents new industrial hygiene problems which must be met if war production is to use womanpower to best advantage.

The conservation of woman power should offer no more of a problem than the conservation of manpower. If we give women healthful working conditions, adequate training in safe practices, and good medical services, we can expect as good results in reducing the time lost due to industrial disabilities among these new employees as we know we can obtain among men.

To win the war, all of the manpower must be used. Many workers must be salvaged who are handicapped by major and minor physical defects. The physical standards for employment must be adjusted

to immediate needs. The preplacement examination should be used as a tool to place all workers, including the physically handicapped, in jobs best suited to their capacities. This examination, therefore, requires the closest cooperation between the employment office, labor unions, and the industrial hygiene service.

An example of cooperation between Federal, State and local agencies in the placement of workers is found in Connecticut. Here the Committee on Industrial Health of the Connecticut State Medical Society, the Manufacturers Association, and the Vocational Rehabilitation Service of the Connecticut State Department of Education have set up rehabilitation clinics with follow-up study for handicapped workers. Orthopedic appliances and training are provided where necessary.

Three problems which belong in the province of industrial hygiene and about which you have read a great deal in your newspapers are fatigue, absenteeism, and nutrition.

In connection with fatigue and hours of work, I should like to call your attention to the recommendations recently issued by eight Government agencies in Washington on hours of work for maximum production. After careful study of the entire problem, these agencies, including the War and Navy Departments, Maritime Commission, War Manpower Commission, War Production Board, Commerce Department, Labor Department, and Public Health Service, recommended a 48-hour week, one scheduled day of rest for each worker approximately every seven days; a 30-minute meal period in mid-shift, and in occupations that involved contact with poisonous substances, sufficient time for workers to wash before eating.

A problem which is not new, but which has recently become acute, is the troublesome problem of absenteeism. In normal times, the workers lose from eight to ten days a year from disability alone. However, our personal observations and reports we receive from many plants indicate that the disability absenteeism problem is minor

when compared to total absenteeism. In many plants five times as much time is taken by workers for non-disabling causes than from those attributable to accidents or illness.

There are many reasons for these absences—boredom on the part of workers, taking time to spend the large amounts of money earned, searching for homes, transportation difficulties, necessary shopping and often just playing hookey.

Absenteeism may be lessened in several ways such as provision of shops convenient to the plants, provision of barber shops and beauty parlors on the plant property, and certain disciplinary measures. Moral persuasion has proved successful in a number of instances. One manufacturer called into conference all returning employees on the day following their absence and explained to them how the absence of such a large number of people wrecked production schedules.

The labor unions can assist in keeping down absentee rates. Acting as the employees' chosen representative, they often can and will exert influence and pressure on the worker.

Living up to the standards of good nutrition is a problem of prime importance with the advent of rationing. However, even with rationing, well planned and well balanced meals can be prepared. Secretary Wickard of Agriculture says we must do three things to achieve good nutrition under wartime conditions: "We must push production of necessary foods right up to the limit; we must see that every family has the chance to get its fair share of the total supply for civilians; and every family must make the wisest possible use of its share."

Education, not only of the people in industry, is important, but education of commercial caterers, including the proprietors of hot dog stands, coffee shops, and similar places in the environs of plants.

Education is not the whole answer. We must make sure the worker has a chance to get the food he needs. There are plants with 20-minute lunch periods where the

workers, if they use the cafeteria, must count on standing in line for 10 or 15 minutes. Cafeterias and lunchrooms should also be available to those on night shifts.

Between-meal refreshments are desirable, but they should consist of more than candy and soft drinks.

A worker's health is as much a product of his home surroundings as his shop environment. Nine out of every ten absences from work because of illness are the result of diseases or accidents occurring in the workers' homes and the community—not on the job.

Industrial health and community health are like the parallel lengths of a ladder, connected by many rungs all the way down the line. If one rung is defective, the entire ladder wavers.

The rapid expansion of industry has strained community facilities to the utmost. War contracts have been unevenly distributed geographically so that at one time 73 per cent of the war contracts were allotted in 20 industrial centers containing 22 per cent of the population. In some centers, the demand for war workers has not yet reached the peak. It is easy to see why community facilities are cracking under the strain.

Crowding, poor housing, transportation difficulties, the lack of sufficient medical facilities, schools and recreation and other welfare services all combine to threaten health, disrupt normal family life, and contribute to the rapid spread of infectious diseases. It is no wonder we face rapid labor turnover and high rates of absenteeism.

The strengthening of general health services in a community thus becomes an essential part of the industrial hygiene program. The industrial physician, of course, should be able to rely upon his local health officer to fight this rearguard action in support of his front line attack against time losses on the war production front. The Public Health Service has been assisting the States to hold the line against preventable diseases by recruiting and training nearly 1000 professional workers and as-

signing them to critical war areas; but in many "boom towns", where the health authorities have been hamstrung by local inertia, truly appalling conditions remain unchecked. The private practitioner here faces the tremendous responsibility of bringing pressure to bear on local authorities, on industry and upon health authorities to correct such conditions.

It is true, local shortages of medical, dental, nursing and other professional personnel make the solution of these problems unusually difficult. Nevertheless, the solutions are already available in many communities or can be made available if the needs of the workers are recognized objectively and assistance is sought.

When we think of industrial health in its modern concept, it seems to embrace the whole of life in a free democracy. The solution of individual problems rests upon the degree to which the industrial hygiene program considers the "whole man"—his home and his job, his family and his friends, his food and his drink, his loves and his hates, his financial problems, and his attitudes toward all these everyday relationships which make up modern life.

No matter how small the effort made for the improvement of industrial health, we shall have the abiding satisfaction of knowing that we have answered with a ringing affirmative the crucial question, "Has it helped to win the war?"

SOME TOXIC REACTIONS OF COMMON EXPLOSIVES

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Our ever increasing effort at arms production is bringing to a large number of physicians problems that heretofore were confined to a small group of industrial doctors. I refer to the care of persons suffering from the several occupational diseases associated with explosives manufacture and shell filling. Until lately, the recognition and treatment of toxic manifestations resulting from exposure to such materials as TNT, tetryl, mercury fulminate, and smoke-

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less powder, were the interest of a small number of industrial physicians who were directly associated with one of the arms manufacturers. Today, however, with new explosives plants being built all over the country, it behooves the physicians to know something of the behavior of the best known of our explosives.

Unfortunately at the very time that this information is most necessary, everyone is too busy to lend much study to it. If we are to duplicate our efforts in the last war, we may expect to see a great deal of work appear in the literature on this subject just after the war is over. This will make interesting reading but will not help in the treatment of patients, as by that time the war workers may be expected to be returning to their old occupations. Study of the available literature reveals some little help but most of this work was done during the last war and the gloomy picture cast is not really a reproduction of what we find today. Several explanations are offered for the high morbidity and mortality seen in the munitions workers of World War I. The best idea seems to be that specifications for TNT were not so high as today and therefore with a lower melting point there was more apt to be present as impurities isomeres of TNT, DNT, and other substances. Some of these products can be shown in the laboratory to be much more toxic than pure TNT. Another important improvement is seen in the better engineering of today's plants, providing better ventilation, segregation of workers during hazardous jobs, and much more adequate care of workers, including frequent examinations, provisions of protective clothing and ointments, and emphasis on cleanliness both in housekeeping and personal hygiene.

To the physician connected with munitions work, this paper may seem elementary, but the group to be reached is the private practitioners who will see an occasional case of poisoning and who may be led considerably astray if they are not familiar with those materials. That this is true, is well shown by the fact that several cases of toxic hepatitis due to TNT went

unrecognized in England until a day or two before death.

TRINITROTOLUENE

This aromatic nitro compound was made in the laboratory by Hepp in 1880, and in 1902 it was first used for shell filling by German military authorities. Other countries soon followed the lead until now it is the principal military explosive. TNT, also known as trotyl, tritolo, tritone, trotol, trinol, triton, and trilite, is a pale yellow material melting at 81° C. When heated there is a characteristic pungent odor. Of the six possible isomeres, the 2:4:6 variety is the one in general use as a military explosive. Before the last war, TNT was considered non-toxic but in the first year of World War I, England alone produced 50 deaths due to toxic hepatitis and in the first seven and a half months of 1917 there were reported more than 17,000 cases of toxic jaundice, with 475 deaths. Since that time, many more deaths have been reported from all countries where it has been used. During this war there have again been deaths in England, Canada, and Finland. Until very recently it seemed that we in this country were not going to see fatal poisoning because of the care used in handling the materials. Unfortunately, this is not true as at least one death has occurred and there may have been several others. Nearly always the picture is the same. A young employee, usually under 25, most often an underweight woman who has been working from two to four months, first has weakness, fatigue, a sense of ill health and then abdominal pain and jaundice. The jaundice progresses rapidly to a deep discoloration, and unless treatment is begun early, death may result. In the fatal cases, autopsy findings are nearly always acute yellow atrophy or liver necrosis. Other fatal cases have been called aplastic anemia and show that sort of blood picture. The bone marrow, however, is not likely to confirm that diagnosis and it is possible that this is only a severe example of the anemia often seen and is due to blood destruction by TNT. This rapid blood destruction may rarely be a cause for jaundice.

This most serious result of TNT exposure is mentioned first only because it is often fatal. The common evidences of exposure are anemia, which is usually mild and will be seen in as many as one-third of the workers exposed, cyanosis varying from mild to severe, and weakness, fatigue, irritability and mild gastric disturbances. These are the things to be on the lookout for, as they are apt to foreshadow the approach of a toxic hepatitis.

The most common type of disturbance is a dermatosis. This causes a great deal of annoyance but results in little lost time. The reaction is apparently a sensitivity phenomenon as TNT is not a primary skin irritant. The hands are most often affected, the picture being that of a vesicular lesion seen between the fingers and around the edges of the palm. The vesicle may be deep seated, producing the characteristic "sago grain appearance." The next most common site of appearance is the anterior surface of forearms. Here the picture is that of a papular erythematous dermatitis. The points of irritation of the clothes on the body such as neck, ankles, and belt line are next in frequency and the appearance is like that on the forearms. The course of the disease is usually mild with the hand lesions drying and scaling, and the other lesions generally fading and disappearing. The dermatosis usually appears after a week to two weeks of contact with TNT and as a rule will disappear in a few days to a week. Occasionally, however, the reaction may be severe with scaling of the entire skin of the palms and a generalized dermatosis over the entire body. The rash usually causes no discomfort but there may be some burning and itching. Scratching may result in a generalized pyoderma but this is very rare. Nearly all workers will continue at their jobs through their period of "hardening." Following the dermatosis the worker appears to enjoy an immunity as long as he remains on the job. An immunity to the skin disease, however, does not mean an immunity to the constitutional effects of the poison. It is interesting in one group of seven reported cases of toxic jaundice that

none of the workers had ever had a dermatosis. The presence or absence of a skin reaction has absolutely nothing to do with the likelihood of development of other toxic symptoms. The dermatosis is most likely to be seen in employees handling amatol which is a combination of TNT with ammonium nitrate. The reason for this is apparently that ammonium nitrate is markedly hygroscopic and causes the material to adhere to the skin. In that the skin is a principal route of absorption of TNT it is also true that amatol workers suffer from much more toxic jaundice than handlers of pure TNT.

TREATMENT

The treatment of the more severe types of poisoning, that is jaundice, should be infusions of glucose as well as a large amount of carbohydrate by mouth. The individual should also receive transfusions and there seems to be some evidence that large quantities of vitamins C and the B complex are of some value. It should, of course, not be necessary to mention that certain drugs such as the sulphonamides, chloral hydrate and amidopyrine, which may cause liver damage or damage to the bone marrow, should be avoided in TNT handlers and especially those people who already have jaundice. The jaundice is apt to increase for a week or two after admission and then begin to fade. One thing that must be borne in mind in the toxic hepatitis following TNT is the necessity for watching the patient for a much longer time than would ordinarily seem necessary. It is too often the case that the patient is jaundiced, hospitalized, the jaundice clears in a few weeks and the patient is allowed to go home. In a short while the patient is again jaundiced, is acutely ill, and shortly dies. This has happened more than once.

The treatment of the dermatosis is commonly only palliative and calamine lotion usually suffices. Should there be a great deal of dryness and cracking of the skin, a bland ointment, such as boric acid ointment, may be found helpful. Where the skin lesions have become infected the treatment

should be that of any other infection. As has been said, most of these workers should be allowed to continue work in order that they may develop their immunity. Other milder symptoms, noted above, require only that the patient be moved to a place where he may avoid contact with TNT. Those signs and symptoms should be considered as a warning of the dangerous results that may follow if adequate protection is not given the workers.

PREVENTION

This requires first proper engineering to give good ventilation and the use of exhaust ventilators wherever there is dust hazard or where there are fumes of TNT. All sweeping at the plant should best be done by vacuum sweepers and this is especially important since we know that several deaths have occurred among sweepers who create a great deal of dust with their brooms. The worker must be furnished with adequate protective clothing which usually consists of a coverall suit that is supplied clean daily. The legs of the trousers must come over the shoe tops to prevent TNT falling into the shoe. Where gloves are used they should best be a closely woven cotton glove with a knitted top to come up over the worker's sleeve. An even better type glove would probably be a soft, washable chamois glove with a similar top and in all cases it should be advised that there be no heavy seams in the gloves as it is along these seam lines that serious dermatosis may be seen. The reason for the knitted top on the glove, which should be obvious, is to prevent the dropping of TNT inside of the glove where it would lie in direct contact with the hand. Protective creams or lotions made especially for this type of compound should be used on the face and hands.

Proper selection of employees will play an important role in prevention of poisoning. The pre-employment examination should rule out any person with previous history of liver disease. Young people should not be employed and an age limit of 19 or 20 years should be used for the TNT lines. Although usually mentioned only in connec-

tion with women, it is also important in the men, that those individuals who are markedly underweight should be ruled out. It seems a very simple fact that should a person be very small, such as underweight young women whose weight averages around 100 pounds, then certainly a much smaller amount of a toxic material is required to cause a fatal poisoning than a large heavy weight man. This no doubt accounts for the generalized idea that women are more susceptible than men. It is only that they are smaller and a similar amount of the material causes a poisoning much quicker. Individuals who are receiving antiluetic therapy must not be allowed to work on the TNT lines as it is known that arsenicals cause liver damage and an added insult by the TNT may be too much. Persons having anemia, or other blood dyscrasias also must be eliminated. Once the employee is at work he should then be examined periodically in order that the early toxic manifestations may be observed and the worker removed to a safer place. Examination should be done about every three weeks and should consist of blood pressure readings, pulse rate, observation of general appearance with special note of skin and mucous membrane for dermatosis and cyanosis. A history should be taken looking especially for fatigue, irritability, nervousness, sleeplessness, loss of appetite and a general sense of feeling under par. Laboratory work need consist only of a hemoglobin determination. Should the hemoglobin be low, then further blood studies must be made. While spectroscopic studies for methemoglobin are of academic interest they are not practicable for the industrial physician. For following a large group of employees, as regards the amount of their exposure, the Foulger index may be of value and will tell the examiner where the greatest exposure is occurring in order that something may be done about it. The value of routine Webster tests on urine does not seem worth the amount of time required as the positive Webster indicates only exposure to TNT and the negative Webster

may mean either no exposure or a fatal poisoning.

Exceptionally good personal hygiene must be insisted upon. All exposed workers must bathe at the end of their work period. A 5 per cent solution of sodium sulphite should be furnished and the worker must apply this to his hands, forearms and face to be followed by washing with soap and water. All workers must also be impressed with the importance of wearing clean underclothes and socks daily.

There seems to be no scientific reason for giving milk or multiple vitamin products to these people other than improvement in nutrition. There has been some evidence that vitamin C may help prevent poisoning.

TETRYL

This aromatic nitro compound was first synthesized by Mertens in 1877. It was not, however, until the first World War that it became prominent as a military explosive. Tetryl is quite sensitive to mechanical shock and is a violent explosive. These properties make it very good for a booster explosive, that is, it boosts the explosion from the fuse to the bursting charge. Tetryl is a light yellow colored crystal melting at about 129-130° C. It is used in both a crystalline and a granular form. Since this material is usually pressed into pellets it is mixed with graphite or a stearic acid and this method of preparation apparently has something to do with the number of sensitivity cases seen among workers. Tetryl is practically odorless but causes a sharp or so-called sharp acid sensation, producing a tendency to sneeze.

There has been a great deal of discussion as to whether or not tetryl causes constitutional disturbances. It is true that a certain amount of irritability, fatigue and a feeling of ill health are noted in some workers with tetryl. There is, however, no authentic record of a serious constitutional poisoning due to this substance. Some workers feel that the mild symptoms spoken of may be the forerunner of a more serious poisoning. There is, however, no real background for that opinion. There have been seen in this

plant two cases of an asthmatic-like condition due to tetryl. These are people who have worked for from a few days to a few weeks and find that they get short of breath and have to leave the room. The two workers seen here were examined and the chest was quite similar to an ordinary asthmatic chest. Inspiration was not particularly affected but expiration was very difficult. Both these patients were improved with adrenalin but on returning to the line a similar condition would reappear. It has been necessary to remove both of these men from the tetryl line. This type of effect has not been stressed in the literature. I am told, however, that in Canada this has caused considerable difficulty and a large number of cases have been seen. It seems quite possible that this asthmatic-like condition may be due to a sensitivity of the respiratory passages to the tetryl similar to that seen in the skin. This may then produce a reflex spasm of the smooth muscle in the small passages, causing a picture similar to ordinary asthma.

There is little disagreement regarding the dermatosis in tetryl. This is a real problem and in many plants has caused much trouble due to the fact that about 40 per cent of the workers may exhibit this type of dermatosis. Unlike TNT dermatosis the type seen with tetryl begins nearly always on the face, being seen around the outer canthus, along the naso-labial fold and at the corners of the mouth. The reaction usually comes on after the patient has been at work for two or three weeks. There is first apt to be a slight itching and irritation of the regions just noted. This is followed by puffiness, usually first around the eyes and a reddening and drying of the skin in these areas. This progresses to a rather marked edema of the corners of the eyes, sides of the mouth and along the naso-labial fold. There is nearly always considerable drying and cracking of the skin. The patient complains bitterly of marked burning of the face. The skin of the neck and anterior chest surface may occasionally be involved. The workers also seem prone to have some

nose bleed and marked sneezing due to the irritating effect of the material on the mucous membrane of the nose.

TREATMENT

Treatment of the asthmatic condition has already been indicated, that is, removal from contact and adrenalin to control the acute attack. These people will have to be permanently removed from the tetryl line. As to treatment of the dermatosis, it is essential that workers showing this affection must be removed from as much of the tetryl dust as possible. They may then continue to work on the line unless the dermatosis becomes more severe, in which case they must be removed altogether from contact. Many of the workers showing only a mild dermatosis will, if they are removed from a marked dust hazard, go on and develop an immunity much like that seen in TNT. Should the employee be so uncomfortable that it is necessary for him to leave work it is usually found that cold boric acid compresses are particularly soothing. Any individual with the tetryl dermatosis must be warned to stay out of bright sunlight and to avoid direct heat. In the milder cases, calamine lotion without phenol will give relief from the burning. The individual with the more severe type of dermatosis must avoid shaving until his skin is considerably improved. As a rule the severe cases will clear in a week to ten days after removal from contact. The milder cases, in those workers who stay on the job, will usually clear up in a few days to a week. The individual who has had a more pronounced dermatosis may, on complete recovery, return to the tetryl line where it is found that about three out of four, so affected, will be able to return to their work with a degree of immunity. Should they break out again, however, it is usually best that they be permanently removed from the line. Olive oil or a bland ointment such as boric acid ointment will be found useful in the stage of drying.

PROPHYLAXIS

Much the same that has been said for TNT will apply to prevention here. That

means particularly the engineering to prevent dust. There is one particular operation in tetryl handling that causes dust, that is the placing of pellets in a long cup-like container. When the pellets are pushed into the container, air is forced out containing fine tetryl dust. This type of work should be done under an exhaust hood and behind a plate of glass where possible. Clothing and protective ointment, similar to that mentioned with TNT, are to be advised also on the tetryl line. The same may be said with regard to bathing and the one thing that will cut down a great deal of the dermatosis is insisting on frequent washing of the hands, using first a 5 per cent sodium sulphite solution, followed by a good grade of soap and water. The worker must be cautioned against wiping his face with his hands. Protective lotions or ointments applied to the hands and face are quite beneficial. Workers should also be cautioned against shaving in the morning before coming to work as this leaves the skin particularly liable to irritation. In picking the worker, those having unusually oily skin should be eliminated, in that the oily skin allows the tetryl dust to stick to it and keep a long contact. It may also increase the dermatosis problem in hastening absorption of the material. It has been noted here, however, that most cases of dermatosis have been seen in individuals having thin, reddish skin with blonde to reddish hair. The workers should be strongly advised not to treat themselves as most ointments applied to the skin increase the irritation considerably.

MERCURY FULMINATE

This material detonates completely and violently on ignition by means of a flame and easily detonates high explosives. It is therefore one of the most suitable materials for detonators. It is a heavy material usually seen to have a slight brownish yellow or grayish tint due to a small amount of impurity. It is white when pure. Mercury fulminate detonates at a temperature of about 180° C. Mercury fulminate is used only as a detonator or as an igniter of the

propellant charge. Of course, the presence of mercury immediately brings up the possibility of mercury poisoning. This is very rarely seen and if the material is properly handled it should never be seen. In common with many other explosives, however, it also causes a dermatosis. There again people who perspire easily and therefore have a wet sticky skin are more apt to show the dermatosis. It is usually seen after the individual has been at work about one week. The lesion is usually a patchy erythematous one appearing on the face and neck as well as the anterior chest. There is some irritation and itching but not nearly as severe as noted in tetryl sensitivity. There is also apt to be a conjunctivitis and some rhinitis with sneezing. The dermatosis usually progresses to a papular rash, the papules being quite red and noted on the face, neck, anterior chest and forearms. Occasionally mercury fulminate gets into a wound and causes the so-called fulminate ulcer. Such ulcerations heal very slowly and do not lend themselves kindly to treatment.

PREVENTION

The prevention is similar to that used in tetryl, that is, engineer out as much dust as possible, use protective clothes and ointments and insist on proper bathing.

LEAD AZIDE

Lead azide is a whitish to buff colored material that is also used as a detonator. Only small amounts of this material are handled; however, the possibility of lead poisoning due to absorption through the respiratory tract or through the alimentary tract must be kept in mind. Very rarely a dermatitis is seen due to lead azide. Prevention should be similar to that with other materials and careful handling will eliminate the possibility of lead poisoning.

SMOKELESS POWDER

Smokeless powder, first found in 1838 by Pelouze and developed in 1845 as a military explosive, is the principal propellant charge used today. Smokeless powder is perhaps not a good name in that this material is not entirely smokeless and it is not seen as

a powder, it being used most commonly in the United States as a cylinder, the cylinders varying from 0.032 inch to 0.947 inch in diameter. Fortunately for us, smokeless powder is a rather benign actor. A few workers will complain of a slight sore throat and a cough or a mild conjunctivitis in the first few days of their exposure to the material. This is apparently due to dust and soon disappears and the worker has little further trouble. There has been in this plant one case of a severe urticaria occurring ten minutes after exposure to smokeless powder. This young lady was relieved by administration of adrenalin, sent back to work and on entering the room she again had a rash. She was removed this time and a patch test, with smokeless powder, was found positive. The young lady was permanently removed from the building containing smokeless powder and has had no more trouble. The only real trouble with smokeless powder is found in the manufacturing processes. Here the individual may occasionally be overcome by fumes of ether and alcohol. The real hazard to health is exposure to nitrous fumes and this will occur only in the event of an accident as there should be no nitrous fumes free in the manufacturing process. Nitrous fumes are extremely irritating and will produce pulmonary edema. The severe signs and symptoms of this accident will usually not make their appearance until several hours after exposure. It is extremely important that any one exposed to nitrous fumes be treated and treatment should begin immediately after the accident. The individual should be carried to the treatment room and immediately put to bed. Respiratory rates should be checked at frequent intervals and an oxygen tent prepared. In order to follow the course in an individual exposed to nitrous fumes, platelet counts should be made every hour. Should the increase in platelets be 10 to 15 per cent, the case may be expected to be of mild to moderate severity. Should a rise of 50 to 100 per cent in platelets occur then the exposure may be considered as being moderate to severe and pulmonary edema will follow. The individ-

ual having any suggestive signs of pulmonary edema should be placed in an oxygen tent and a sufficient concentration of oxygen be given to keep the individual's color a healthy pink. With more pronounced pulmonary edema venesection may be of value, provided there is no evidence of circulatory collapse. Morphine must not be given to these patients. After recovery from the immediate effects of the exposure the individual who has had pulmonary edema must be carefully observed for at least two weeks in order that a developing bronchopneumonia may be found in its early stages.

BLACK POWDER

Black powder is probably the oldest of all explosives, dating back to the very early Chinese. European history mentions this material as early as 1250 A.D. Black powder was the principal propellant until 1870. However, it has been displaced by other materials and is now used principally as an ignition charge. Since it is used in very small amounts and is not toxic no trouble has been seen at this plant.

AMMONIUM NITRATE

This material is combined with TNT to make amatol. It is combined in several percentages, most common of which is fifty-fifty. Amatol then is used as the bursting charge in most high explosive shells and bombs. Ammonium nitrate interests us mainly in that it is a considerable nuisance. It is quite irritating when it gets into open wounds and delays healing for long periods of time, sometimes resulting in difficult ulcers. This is especially unfortunate in that these employees who are handling ammonium nitrate, especially in crystallization plants, are apt to have a number of minor burns. A few cases of weakness, pallor, lowered blood pressure and a feeling of faintness have been seen in people who are exposed to heavy fumes of ammonium nitrate for a long period of time. It is be-

lieved that this is probably due to the presence of some nitrite. This is, however, only theorizing. An occasional individual is seen who exhibits some sensitivity to ammonium nitrate and he may show an urticarial rash. This may be seen on almost any part of the body. The prevention of the health hazard here is similar to other places, that is, cut down the dust and avoid fumes with the use of fume hoods or exhaust ventilators. Those individuals exhibiting unusual sensitivity must be removed from work.

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NEW ORLEANS Medical and Surgical Journal

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THE NEW PRESIDENT

Dr. C. C. DeGravelles will take up reins of office on the third of May, having been selected as President-Elect last year.

The new President was born on Point Pleasant Plantation near Morgan City on November 21, 1883. He attended Rugby Academy, New Orleans, and then went to Tulane University where he attained his degree of Doctor of Medicine in 1910. Immediately after his graduation he worked in St. Mary's Hospital, Patterson, Louisi-

ana, and then moved to Morgan City where he practiced to 1934, when his second change of location carried him to New Iberia where he has been practicing medicine since that time. He is interested particularly in internal medicine.

Dr. DeGravelles has held many offices in the Parish and State Medical Societies. He is a Past President of St. Mary Parish Medical Society and the Third District Medical Society. He has been a Councilor of the Third District since 1929. He was Chairman of the Committee on Medical Economics for several years, and in 1927 he was elected Vice-President of the Louisiana State Medical Society. The New President is a man of parts. He not only has been active in organized medicine, but he has been interested and held a leading part in many other activities. He has been President of the St. Mary Parish Board of Health, and served on St. Mary Parish School Board. He was at one time President of the Peoples State and Savings Bank in Morgan City, and he is a Past President of the Rotary Club in New Iberia. He is Examining Surgeon of the Southern Pacific Railroad, and is Deputy Coroner of Iberia Parish. He is a member of the Phi Beta Phi Medical Fraternity, and a Fellow of the American College of Physicians. He served loyally and faithfully as Chairman of the Board of the Lafayette Induction Center, and is a member of the Sons of the American Revolution.

It is obvious that Dr. DeGravelles has led a busy, active, and useful life. His interest has not been confined to medicine and the practice of medicine, but he has been a tremendous force for the betterment of the people of the parishes and cities in which he has lived. The broadmindedness of the new President, his loyal service to organized medicine in the past, and his wonderful character should make him an outstanding president of the State Medical Society.

THE SHORTAGE OF PHYSICIANS

In certain areas of the country there is a marked deficiency in the number of med-

ical personnel giving services to the sick. A great deal has appeared in both medical and lay press concerning the movement of doctors from areas where population has fallen off to areas where the population is markedly increased. A plan has been worked out whereby there will be re-allocation of physicians but on the whole it has not proved to be satisfactory. The local doctors have felt, except in a few instances, that they are quite capable of taking care of the situation as it exists. They do not want newcomers to come in who might remain there after the war; the doctors, in many of the cities and towns where there has been a large influx of new people, feel that the newcomers will go back to their former homes when the defense industry activity falls off and they feel it is incumbent upon them to hold places and patients for the benefit of those doctors who have given up their practices and gone into the Army or Navy to serve their country, consequently the re-allocation of physicians has been few and far between.

Another difficulty that has arisen is the willingness of physicians to leave places where they are already well established, nor do they desire to move into those sections of the country where the population has increased to such an extent that living quarters are almost impossible to obtain, nor do they feel like binding themselves to leave that place at the end of the war.

Many of these objections are overcome by one of the plans which would call for commissioning of officers in the Public Health Service, sending them to the critical areas and promising to withdraw a man, from that area where he has been sent, at the end of the war. But again there can be no guarantee that even if a public health physician is ordered from that particular place when the war is over that he may not get out of the service and return to that locality.

Illustrative of the shift of population in Louisiana, are the figures determined for certain localities which have been deduced from the issuing of ration books. In the City of New Orleans in 1940 the census showed a population in round figures of 494,000.

Ration books have been issued to 531,837 persons. East Baton Rouge shows a tremendous increase in population, from 88,000 persons it has gone up to 113,000. Calcasieu Parish likewise shows a remarkable increase in the number of people in the parish; 56,000 were living in the parish in 1940, now the figures have climbed to almost 76,000. In Rapides Parish there are 14,000 more people than there were in 1940.

In one or two of the cities of these last three parishes there have been complaints that there were too few doctors. Whether or not these complaints are justifiable is a question. Certainly Louisiana has given a very large number of civilian physicians to the armed forces and it may be that the percentage of doctors to population is in theory inadequate to take care of civilian needs. However, the doctors who have been left behind are working nobly, strenuously and under tremendous pressure. They have taken over the work of their brother physicians who have entered the services and with the exception, as has been said of a few localities, the medical situation seems to be well in hand and the civilian population is receiving adequate and good medical treatment. Of course it may come about that in the event of epidemics the local physicians may not be able to take care of the population, but fortunately the last two years have been unusually healthy years and there have been no epidemics and it is hoped there will be none such as devastated the country in 1918.

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THE TREATMENT OF LEG ULCERS

Many and varied are the methods that have been advocated for the treatment of leg ulcers. Some are effective for a time and then seem to disappear into the limbo of disuse as they have not proved their worth over a long period of time. Other methods of treatment have become more or less standardized and sometimes will give good results and other times the results will be of no value. The older individual who has peripheral vascular disease is one of the group of patients whose ulcers are notori-

ously difficult to heal. Sometimes, in fact frequently, they may never be cured.

Naide*, working in the peripheral vascular section of the Robinette Foundation in Philadelphia, reports upon a group of patients with peripheral vascular disease who have been treated by a method which heretofore has not been employed. Briefly the method is application of blood taken from the antecubital vein, placed on the ulcer and then allowed to dry. The drops of blood are smeared or spread over the surface of the ulcer in a fairly thick film. This blood is then allowed to clot, taking about one-half to two hours to do this and then a dry dressing is applied. The ulcer is examined in a few days and if the clot has been broken the process is repeated. It takes from one to twenty applications of blood to bring about healing.

*Naide, Meyer: Treatment of leg ulcers with blood and concentrated plasma, *Am. J. Med Sci.*, 205:489, 1943.

The author has modified this method of treatment by using dry plasma diluted with one-quarter of the amount of distilled water, which would be necessary to add to the plasma to make it the concentration of human plasma. He thinks this method is possibly superior to the local application of blood.

The results have been excellent. Nine of fifteen patients have been cured; ten of these ulcers were caused by arteriosclerosis and by thrombo-angiitis obliterans; five were varicose ulcers. All of the ulcers had been treated by a variety of methods and some of the ulcers had lasted as long as three and a half years. One of the immediate results of local application of blood was to reduce the inflammatory reaction and to relieve pain promptly. This is a very simple method and because of its simplicity and the success which Naide has had in the treatment of the type of ulcers which are difficult to heal, the method deserves further employment by others.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

May 3. 64th Annual Meeting, Louisiana State Medical Society, Baton Rouge.

May 4. Eye, Ear, Nose and Throat Staff, 8 p. m.

May 5. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Mercy Hospital Staff, 8 p. m.

May 6. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
Baptist Hospital, Executive Committee, 8 p. m.

May 10. Orleans Parish Medical Society, Scientific Meeting, 8 p. m.

May 12. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Clinico-pathologic Conference, U. S. Marine Hospital, 7:30 p. m.
Touro Infirmary Staff, 8 p. m.
Women's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.

May 17. Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.

May 18. Charity Hospital Medical Staff, 8 p. m.

May 19. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.

May 20. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

May 21. I. C. R. R. Hospital Staff, 12:30 p. m.

May 24. Joint Meeting, Orleans Parish Medical Society with the New Orleans Gynecological and Obstetrical Society, 8 p. m.

May 25. Baptist Hospital Staff, 8 p. m.

May 26. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
French Hospital Staff, 8 p. m.
Clinico-pathologic Conference, U. S. Marine Hospital, 7:30 p. m.

May 27. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

May 28. L. S. U. Faculty Club, 8 p. m.

During the month of April the Society held one regular scientific meeting. At this meeting the

following program was presented: Some Practical Aspects of Human Blood Plasma Preparation and Therapy, by Dr. J. W. Davenport, Jr.; The Treatment of Carcinoma of the Cervix at Charity Hospital, by Drs. Manuel Garcia and Leon Menville. Dr. Davenport's paper was discussed by Drs. Daniel N. Silverman and Harry A. Davis, and Dr. Peter Graffagnino discussed Drs. Garcia and Menville's paper.

NEWS ITEMS

Dr. Joseph A. Danna recently addressed members of the Louisiana State Pharmaceutical Association, Districts One and Two. Dr. Danna spoke on blood plasma and the Army-Red Cross Blood Donor Center.

Dr. B. G. Efron was recently elected to the

board of regents of the American College of Allergists.

Drs. A. I. Weil, F. R. Gomila, Sr., Val Fuchs and W. A. Wagner were recently elected to the board of directors of the Louisiana League for the Hard of Hearing for 1943.

Dr. Henry D. Ogden recently attended an informal meeting of the Southwest Allergy Forum at Dallas.

Dr. John H. Musser attended the recent meeting of the Arkansas State Medical Society at Little Rock. Dr. Musser spoke on The War and Medical Education, and on The Doctor's Heart.

Daniel J. Murphy.
Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

THE ANNUAL MEETING

Unfortunately, the Journal will be going through the press while the annual state meeting is being conducted in Baton Rouge. Consequently, it is not possible to print anything more than the bare announcement that the House of Delegates will meet on May 3, and that the prospects look most favorable for a splendid opening meeting.

LOUISIANA TUBERCULOSIS ASSOCIATION

The 19th Annual Meeting of the Louisiana Tuberculosis Association was held in the Jung Hotel, Wednesday, April 21 with Dr. Julius L. Wilson, presiding.

The morning program consisted of a symposium on Tuberculosis Control Among Special Groups, under the leadership of Dr. Sydney Jacobs. Dr. Chester A. Stewart spoke about College Students, Dr. S. S. Pinto on Industrial Workers; Dr. W. D. Beacham on Pregnant Women; and Dr. F. F. Brown on Negroes.

The luncheon meeting was held in the Rose Room with Mr. Monte M. Lemann presiding, at which time Lt. Colonel F. P. Rizzo spoke on Chest X-Ray Work on Selectees.

The afternoon session was presided over by Dr. B. I. Burns. The subject of the symposium in the

afternoon was Methods in Community Tuberculosis Control. Dr. Edgar Hull spoke on Tuberculin Testing; Dr. R. Alec Brown discussed Survey X-ray Methods; and Mr. Jess W. Hair on Health Education as a Necessary Basis for the Program of Tuberculosis Control.

AMERICAN FEDERATION FOR CLINICAL RESEARCH

The second scientific meeting of this organization was held Wednesday, April 17 at 8 o'clock in the Hutchinson Memorial Building.

The following papers were on the program: "Studies on Early Immunization Against Pertussis" by Dr. Wallace S. Sako; "Studies of Niacin Excretion" by Dr. Grace A. Goldsmith; "In Vitro Studies of Oxidizing Agents on *Clostridium welchii*" by Dr. Maxwell F. Kepe.

The scientific meetings of the New Orleans Section of the American Federation for Clinical Research are open to all who may be interested. Papers are strictly limited to ten minutes. Discussion is to follow each paper, and is limited to a total of 20 minutes. Members, associates, and guests may participate in the discussion. Each discussor is limited to five minutes.

G. R. Meneely, M. D., Secretary.

REGIONAL MEETING OF THE COLLEGE OF PHYSICIANS

A most successful meeting of the American College of Physicians was held in New Orleans, April 16-17, under the chairmanship of Dr. Edgar Hull. This regional meeting was for the members of the college and invited guests from Arkansas, Louisiana, Mississippi, Tennessee, and Eastern Texas.

On the first day a series of clinics were held in the morning, followed by a luncheon at the Roosevelt Hotel at which time two addresses were given, one by Commander Edward L. Bortz from Philadelphia, and one by Colonel W. Lee Hart of Fort Sam Houston. The afternoon session, presided over by Dr. J. E. Knighton of Shreveport, was a series of papers by such men as Colonel Walter Bauer, Lt. Colonel Henry M. Thomas, Jr., Mark F. Boyd, Captain Bertram Groesbeck, Jr., U. S. Navy, and Dr. Chauncey D. Leake of the University of Texas Medical School. Friday evening there was a dinner for the college members and their guests, at which time addresses were given by representatives of the Army, Navy and the American Medical Association.

Saturday morning was devoted to a series of 15 minute clinics, at the end of which there was conducted a clinical pathological conference which aroused most favorable comment as being interesting and constructive.

The meeting was a great success; over 366 men registered for this day and a half session.

Participating States:

Arkansas	18
Louisiana	156
Mississippi	55
Tennessee	19
Texas	79

Other States, including Alabama, District of Columbia, Florida, Georgia, Illinois, Massachusetts, New York, North Carolina, Oklahoma, Pennsylvania and Virginia 39

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	Asso-		
	Fellows	ciates	Guests
M. C., U. S. Army.....	38	24	137
M. C., U. S. Navy.....	5	1	11
U. S. P. H. Service...	4		7
Total Service Drs.....	47	25	155
Civilian Doctors	87	19	33
Totals	134	44	188

366

LOUISIANA STATE UNIVERSITY SCHOOL OF MEDICINE

Dr. George McCoy, Director of the Department of Preventive Medicine at the Louisiana State University School of Medicine, has left the city to attend the meeting of the District of Columbia

Basic Science Board which will be held at Washington, D. C., on April 22. Dr. McCoy will also attend the meeting of the United States Pharmacopoeia Society in New York on April 23 and April 24. Dr. McCoy will also attend the meeting of the National Foundation for Infantile Paralysis, which will be held in New York on May 12.

The Department of Surgery staff will be represented at the American Surgical Association meeting in Cincinnati, Ohio, on May 13 and 14, by Dr. Urban Maes, Director of the Department of Surgery, and Dr. James D. Rives, Clinical Professor of Surgery.

Dr. Rupert Arnell was guest speaker at a joint meeting of the Rapides Parish Medical Society and the Staff Conference of the Huey P. Long State Hospital at Alexandria on April 6, 1943. The subject of Dr. Arnell's presentation was "The Edemas Complicating Pregnancy."

TUBERCULOSIS PROGRAM

The following will be put into effect at the opening of the academic session beginning March 11, 1943.

1. Detection
 - a. Mantoux test with old tuberculin 1:1000 required for all students on matriculation. Test to be repeated semi-annually on all negative reactors.
 - b. X-ray of chest required on every student at time of admission to medical school.
 - c. Usual clinical and laboratory studies on all suspected cases of tuberculosis.
2. Disposition of Tuberculous Cases
 - a. Cases with positive sputa to be excluded from school. Disposition of cases with negative sputa to be left to judgment of the Student Health Service.
 - b. Criteria for re-admission of students who have tuberculosis.
 1. Negative sputum.
 2. Opinion of the Director of the Student Health Service that the student has sufficiently recovered to perform the usual duties of a medical student.
 3. Students re-admitted to school may remain enrolled only if their sputa remain persistently negative, irrespective of other findings.

Negative sputum is defined as two consecutive 6-day specimens of sputum negative for tubercle bacilli by concentration technic.

A persistently negative sputum is defined as a single specimen of sputum examined according to the above technic every 3 months during the school session and found negative.

c. The treatment of cases who are advised to leave school shall not be a responsibility of the Student Health Service.

3. Protection and Prevention

a. All persons who attend necropsies on tuberculous cases shall be required to wear masks.

b. Patients with tuberculosis or who are suspected of having tuberculosis shall be required to wear masks when they are being examined by students, interns, residents, or staff members.

c. Students are required to wear masks when examining sputa of patients suspected of having tuberculosis.

d. All clinical departments and the Department of Pathology and Bacteriology shall give special attention to the instruction of students regarding the precautions to be taken in the handling of tuberculous material and in the examination of tuberculous patients.

NEWS ITEMS

The regular monthly meeting of the medical division of the Charity Hospital visiting staff was held on Tuesday, April 20 in the auditorium of the institution. The following was the program: "Case Presentation of Unusual Thyroid Tumors" by Dr. C. Magee; "Case Presentation of Systemic Granuloma Inguinale" by Dr. L. C. Paggi; "Case Presentation of Disseminated Lupus Erythematosus" by Dr. L. Rausch; "Case of Ascites" by Dr. J. Fleet.

The E. R. Squibb & Sons firm has had a star added to the Army-Navy "E" Pennant which it is their privilege to fly over their offices and laboratories. The star means that the "E" award has been renewed for another six months.

An intensive course in electrocardiography will be conducted in the Cardiovascular Department of the Michael Reese Hospital, Chicago, under the direction of Dr. Louis N. Katz. This course will be conducted August 16-28. The fee for the course is \$100.00.

Mr. J. W. Reily, Vice-President of the New Orleans' United Community and War Chest, has been appointed a director of the National War Fund, Inc. Among others nationally known in business and civic life who are serving on the board are: Captain Edward D. Rickenbacker, Bernard M. Baruch, Marshall Field, Edsel Ford, Thomas W. Lamont, Mrs. Dwight W. Morrow, John D. Rockefeller, Jr., and William Allen White.

The National Foundation for Infantile Paralysis announces that a five-year grant of \$150,000 has been given to the Yale University School of Medicine for the establishment of the Yale Poliomyelitis Study Unit. These studies will be made under the direction of Dr. John R. Paul, professor of Preventive Medicine of this institution. The Yale Poliomyelitis Commission was established in 1931. It will now undergo reorganization and enlargement of its activities.

REGISTRATION OF N. O. GRADUATE MEDICAL ASSEMBLY REGISTRATION OF LA. PHYSICIANS EXCLUDING NEW ORLEANS

Zelma Alden, Monroe
U. J. Arreteig, Church Point
John S. Bailey, Church Point
William E. Barker, Jr., Plaquemine
Felix Boizelle, Baton Rouge
W. F. Brooks, Vinton
Harold S. Cohn, Alexandria
Nelson A. Cox, Napoleonville
A. A. Culpepper, Alexandria
H. J. Dauterive, New Iberia
P. A. Donaldson, Reserve
M. H. Foster, Alexandria
S. F. Fraser, Many
W. R. Garrett, Springfield
Carroll F. Gelbke, Gretna
Charles F. Gelbke, Gretna
P. R. Gilmer, Shreveport
Ben Goldsmith, Lake Charles
U. S. Hargrove, Baton Rouge
S. R. Henry, Crowley
Rufus Jackson, Baton Rouge
John N. Jones, Bastrop
Daniel W. Kelly, Oak Grove
Ralph Lampert, Alexandria
B. B. Lane, Jr., Zachary
Thomas Latiolais, Kaplan
Percy H. LeBlanc, Donaldsonville
M. L. Levy, Jonesville
Charles W. Lewis, Eunice
A. W. Martin, Bogalusa
Claude A. Martin, Welsh
Dawson T. Martin, Donaldsonville
Keith Mason, Shreveport
Morgan W. Matthews, Shreveport
W. R. Mathews, Shreveport
Dorothy R. Mattingly, Baton Rouge
E. C. Melton, Plaquemine
F. H. Metz, Morgan City
J. W. McLaurin, Baton Rouge
T. C. Paulsen, Baton Rouge
E. J. Petitjean, Opelousas
Kirby A. Roy, Mansura
Charles L. Saint, Elizabeth
Philip J. Saleeby, Algiers
Reuben Sanford Roy, Natchitoches
E. A. Schexnayder, Donaldsonville
William M. Scott, Shreveport
Walter D. Simmons, Covington
W. W. Smith, Caddo
G. M. Snellings, Monroe
Leo Saporito, Kaplan
Rhodes J. Spedale, Plaquemine
Thomas E. Strain, Shreveport
Jesse F. Tanner, Bernice
A. D. Tisdale, Monroe
A. S. Tomb, Shreveport
T. B. Tooke, Jr., Shreveport
L. Roland Young, Covington
C. A. Weiss, Baton Rouge

H. Aubrey White, Alexandria.
 Fred C. Winn, Crowley
 S. George Wolff, Shreveport
 J. L. Woodall, Colfax

RECOMMENDATIONS FOR A VENEREAL DISEASE CONTROL PROGRAM IN INDUSTRY

Advisory Committee on the Control
 of Venereal Diseases

Otis L. Anderson, Chairman

In order to assemble current authoritative information and to formulate basic principles applicable to a program of venereal disease control in industry, the Surgeon General has appointed an Advisory Committee to the United States Public Health Service. This Committee has outlined the objective of such a program as:

A. Medical and Public Health:

1. To find and refer for proper medical management all cases of venereal diseases among workers in industry.
2. To establish equitable policies for the employment of applicants and continuation of services of employees who have venereal diseases.
3. To coordinate the community and industrial venereal disease control programs.

B. Employee:

1. To improve the physical condition of employees.
2. To reduce the number of work days lost through illness or injury.
3. To provide job placement.
4. To prolong and increase the earning power of employees.

C. Employer:

1. To reduce compensation costs.
2. To lessen work interruptions and labor turnover.
3. To enhance production by increasing the efficiency of workers.
4. To minimize personnel problems.

In order to assure agreement on all phases of fundamental policy, the committee recommends that certain agencies be consulted in carrying out this program: the State labor department, industrial commission or similar department of State government; the appropriate committee of the State medical society; the association representing employers; the labor organizations; appropriate voluntary health and welfare associations.

Responsibility for the administration of the program should be shared by the industrial hygiene and venereal disease divisions of the State health department. The program should not be inaugurated without a complete educational program. The employee should be convinced that adequate treatment protects both his health and his ability to earn a living, and the employer that not all cases of venereal disease are infections, through an educational program before venereal disease control measures are introduced.

In order that the control program may be effective, preemployment examinations should be mandatory for all workers. Laboratory tests for syphilis and gonorrhea should be made a part of periodic, reemployment or "return from illness" physical examinations which are the policy of the industry. The interval between examinations should under no circumstances be more than three years.

It is of utmost importance that the results of the medical examination be considered confidential between the worker and the medical staff. Information should be furnished to others only with the consent of the individual concerned or, failing this, on legal advice. The medical staff should make proper recommendations to the management as to the physical fitness of the employee for work. When the usual clinical record is kept in an open file, venereal disease forms should be filed in the medical departments for the use of the medical staff only.

There is no reason for denying employment to an applicant or for discharging an employee because an examination has revealed evidence of syphilis or gonorrhea, provided:

1. That the employee agrees to place himself under competent medical management;
2. That, if the disease is in the infectious stage, employment should be delayed or interrupted until such time as a noninfectious state is established through treatment and open lesions are healed;
3. That when syphilis exists in the latent stage, employment should not be delayed or interrupted;
4. That employment may be deferred or denied when the individual is an industrial hazard;
5. That occupational readjustments of employees be made of individuals developing manifestations;
6. That workers with syphilis in any of its stages be excluded from areas where there is exposure to chemicals which may produce toxic reactions, and those having cardiovascular syphilis or neurosyphilis should not be exposed to physiologic stresses;
7. That workers with gonorrhea should be allowed to work only under special medical observation during the administration of sulfonamide drugs.

The applicant or the employee whose examinations reveal evidence of a venereal disease should be called to the industrial physician's office for a conference. He should be instructed as to the nature of the disease which he has in order that he may cooperate intelligently with the requirements of the program. He should be referred to a reputable source for medical attention and be furnished with a letter directed to his physician stating the results of the examination and what is expected of the employee as to regularity of treatment if he is to be employed. The industrial physician should receive a record of treatment at

about monthly intervals. The names of individuals who have neglected or refused treatment should be turned over to the health department for appropriate action in bringing them back to treatment.

The plant physician making a tentative diagnosis of communicable syphilis or gonorrhea should without delay acquaint the appropriate health authority with the facts.

CONFERENCE ON WARTIME VENEREAL DISEASE CONTROL

This meeting was held in the State Capitol of Baton Rouge on Friday, April 2. Mr. Jess W. Hair, Director of Public Health Education of the Louisiana State Board of Health presided. On the program were Governor Sam H. Jones, Dr. David E. Brown, President of the Louisiana State Board of Health, Mr. Bascom Johnson of the American Social Hygiene Association, Dr. John M. Whitney of the City Board of Health, and representatives in the Army, Navy, and the Air Corps, as well as many others.

Dr. David E. Brown, president of the Louisiana State Board of Health, explained in the following remarks the purposes of the meeting:

It is indeed a pleasure at this time for me to have this opportunity of participating in this meeting. This is the first state-wide conference that has ever been called in Louisiana for the purpose of discussing the venereal diseases. I want to say that Louisiana is one of the first states in the union to put on a state-wide educational program for the purpose of stamping out venereal disease. I feel we have taken the lead when it comes to cooperation with the various agencies, the Army, the Navy and United States Public Health Service in carrying out a program that has been deemed so important by the leaders of our nation.

The subject of venereal disease is one that has been neglected. In fact up until recently if anyone in Louisiana suggested holding a public meeting for the purpose of discussing social diseases in the open, he would have been criticized as vulgar and indecent. It was only discussed in offices of physicians behind closed doors. We have lived to see the time when people of the state and nation have realized the importance of these diseases. As the Governor has already said, it is not only a medical and public health problem, but also an economic one. This subject has never been attacked in various isolated sections of the country before this time. During World War I Louisiana Legislature took a forward step along this line and passed a law attempting to control this disease. We are still operating under that law.

Louisiana is fifth from top in incidence of venereal disease. There are five other states in the south that have more cases than does Lou-

isiana. It is important that we take a forward step for the reason that within the bounds of this state we have many thousands of soldiers, not only sons of people of our state but from every state in the union. As result of these large numbers of soldiers being congregated in our camps, we have an enormous number of prostitutes coming from all over to collect around the camps and these women are disseminating diseases to these young men who must go to war to win our battles.

Louisiana was the first state in the union to establish a detention hospital for apprehending and treating prostitutes. We have had this institution which is located at Leesville near Camp Polk, in operation for one year. There have been 75 to 100 girls confined in the institution every day. We are able at this time to discharge those patients as cured within five to six weeks. I have been asked from many sections if we expect to carry on these institutions and clinics and I will say that we do expect to carry on. We hope that we can give sufficient treatment to render the prostitutes noninfectious and when we do that we have done a great thing toward stopping the spread of these diseases. There is no reason why we should not stamp out these diseases because they are preventable and we have the remedy which is a positive cure.

During my period of medical practice, I have seen many changes in the treating of venereal disease. In medical school twenty years ago, a case of syphilis would be given treatment by the clinician over a period of two to three years and the cure was not definite. However, that is not true today; with cooperation from the patient in carrying out instructions, the time of complete cure is greatly shortened (6-8 weeks). With a disease that is preventable, with a positive cure, and facilities for treatment, there is no reason why we should not eventually stamp out the disease. As the Governor told you, there are two to three sides to the question—not only what it means to the public from a medical and public health standpoint, but its pertinency to the tax payer of the country. If hospitals and asylums are visited, patients are found there with late manifestations of various types of venereal diseases. I do not intend to give you a lot of figures, as several persons here will give you such information on the incidence of the disease. I want to say the State Board of health is cooperating with the Public Health Service, the Army and the Navy in the programs which it is considered will be best to stamp out and control this disease.

At the conclusion of the meeting a Committee on Recommendations proposed a resolution which was unanimously adopted. This resolution read as follows:

Be it Resolved, that there be organized in each parish of Louisiana a committee on "Wartime Control of Venereal Disease" consisting of:

Parish Health Unit Director, President of Local Medical Society, Mayor, Sheriff, City and District Attorneys, Chief of Police, President of Police Jury and Judges.

UNITED STATES PUBLIC HEALTH SERVICE

Asst. Surgeon Neil Callahan has been relieved from duty at New Orleans and has been sent to the Coast Guard Academy in New London, Conn.

Asst. Surgeon Grady M. Wallace has been ordered from Baltimore to report to the Marine Hospital in New Orleans.

Asst. Surgeon George Fein has been relieved from duty in Hot Springs, Ark., and ordered to report to the State Health Department in Leesville, La.

P. A. Surgeon Robert L. Zobel has been relieved from duty in Baton Rouge and ordered to the State Health Office in Nashville, Tenn.

P. A. Surgeon George C. Van Dyke has been relieved from duty in Puerto Rico to report to the Marine Hospital, New Orleans.

Asst. Surgeon Charles W. Fluke has been sent from New Orleans to Galveston, Texas.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Louisiana State Board of Health shows that for the week ending March 20 measles led all other reportable diseases with 232 cases listed for this particular week. Syphilis has usually always been the most frequently reported of the reportable diseases, but the State Department of Health is now reporting the venereal diseases only once a month. Other diseases occurring in numbers greater than 10 include 42 cases of mumps, 13 of influenza and of meningococcus meningitis, 12 of chickenpox, 11 of scarlet fever, and 10 of tuberculosis. Nine cases of meningococcus meningitis were reported from Rapides Parish and arose in the army camps thereabouts. It was unusual that in this week a case of smallpox was reported from Lafayette Parish. The measles epidemic still continued, as did a mild epidemic of mumps in the week which closed March 27. There were 197 of the former diseases reported from Lafayette Parish. The measles epidemic still continued, as did a mild epidemic of mumps in the week which closed March 27. There were 197 of the former diseases reported and 66 of the latter. There were 24 instances of chickenpox listed, 18 of pulmonary tuberculosis, 15 of influenza, and 10 of scarlet fever. A great percentage of measles cases were reported from military sources. Five cases of meningitis were reported this week from these sources. There were also listed 46 cases of unclassified pneumonia. The report ending April 3 includes the total cases of venereal diseases reported during the month of March. There were 697 cases of syphilis, 1,038 of gonorrhea, and 127 of chancroid. Other diseases include 282 of measles, 92 of mumps, 41 of cancer, 37 of pulmonary tuber-

culosis, 19 of lymphogranuloma venereum, 21 of lobar pneumonia, 18 of chickenpox, and 16 of scarlet fever. There were also listed 78 cases of unclassified pneumonia, which means of course that these were so-called virus pneumonias which are extremely prevalent this winter. There were nine cases of meningococcus meningitis also reported, with no other relatively rare disease. For the week which ended April 10 there were listed 170 cases of measles, 32 of mumps, 28 of pulmonary tuberculosis, 24 of chickenpox, 16 of influenza, 15 of meningococcus meningitis, and 13 of cancer. There were also reported 50 cases of unclassified pneumonia. The meningitis cases again were largely in the army camps, 13 of the 15 cases coming from military sources.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week ending February 27 there were reported 187 deaths in the city, divided 127 white, 60 all others. This was an increase in the total number of deaths in the previous week when only 170 were listed, and quite a considerable increase over the three year average corresponding week, figures for which are 157. The following week, which closed March 6, there were 176 deaths in the city, divided 112 white, and 64 colored, with 12 deaths in children under one year of age. There was quite a sharp increase in the week which was concluded on March 13. Of the 195 deaths, 113 were in the white and 82 in the colored population. Fifteen of the deaths were in children, divided approximately equally between the two races. For the last week terminating March 20 for which we have figures, there were 52 less deaths in the city than in the previous week. Of the 143, 97 were in the white and 46 were in the colored race, with 12 of them being in children under one year of age. The first 11 weeks of the year have not been as healthy as the corresponding weeks in 1942, there being 177 more deaths in the city than in 1942. It must be taken into consideration, however, that there has been a population increase in the city of New Orleans quite considerable in number.

DR. JOHN B. ELLIOTT (1870-1943)

One of New Orleans' outstanding physicians died on April 14, in Birmingham. Dr. John B. Elliott was born in Georgia in 1870, graduated from Sewanee in 1891, and entering Tulane Medical School, graduated in medicine in 1894. Dr. Elliott was for eleven years head of the Department of Medicine of Tulane. He succeeded his father, Dr. John B. Elliott in this position. Following Dr. Elliott's resignation he was in a short time ap-

pointed to the Board of Administrators of Tulane University, and served on the Board until he reached the age of 65.

During the last war he was in charge of the Tulane University Base Hospital Number 24, and spent two years on active duty.

Dr. Elliott was an outstanding physician. He was loved and respected by his patients, and in the later years of his life when he confined his work almost entirely to office and consultation work the patients came to him from all over the Far South for his advice and instructions. He was always a student of medicine, and regularly he would attend important medical meetings. It was said of him that he would spend two or three days alone in the Scientific Exhibits of the American Medical Association. He always kept up in medicine and knew everything that was fresh and up-to-date.

In recognition of the many years of service to Tulane, Dr. Elliott had conferred upon him the honorary degree of Doctor of Laws in 1937.

Dr. Elliott was incapacitated for several years prior to his death. At the time of his death he was staying with his son in Birmingham, Alabama.

DR. STANLEY EDWARD GRAHAM
(1888-1943)

Dr. Stanley Edward Graham of St. Francisville, was born in East Baton Rouge Parish, October 31, 1888, and died March 25, 1943, at the age of fifty-four years of coronary thrombosis. He was graduated from the University of Tennessee in 1910, and was a member of the State and American Medical Societies. He practiced medicine in Louisiana from 1910 to 1943.

CAPTAIN SAMUEL A. BARKOFF
(1915-1943)

Captain Samuel A. Barkoff was killed on April 10, 1943, as a result of the crashing of an army bomber on which he was flying. This young officer was well known to the Charity Hospital Staff.

He graduated from Louisiana State University Medical School in 1937, and then interned and served as a house officer in that institution.

WOMAN'S AUXILIARY

Reports from Auxiliaries have been conspicuous by their absence this month, Mrs. A. G. McHenry of Ouachita being the only one to send in news.

Twenty-three members of the Ouachita Auxiliary attended a luncheon meeting at Hotel St. Francis. Donation of a sum of money to the Women's Field Army for Control of Cancer was voted. Dr. A. D. Tisdale, the guest speaker, was introduced by Mrs. R. W. O'Donnell, the president, and brought an important message to the group.

Orleans Parish members are busy this month with their annual campaign for periodic health examination. A number are working tirelessly in the drive for memberships in the Women's Field Army for the Control of Cancer. In addition to the usual war work that is regularly carried on several are busy selling War Bonds. Mrs. George Taquino, president-elect of the State Auxiliary, and Mrs. H. B. Gessner, a past president of the same group, are both proving themselves to be excellent saleswomen of bonds.

Before this issue of the Journal is in the hands of readers the Annual meeting will be history. Though a large attendance is not expected it is hoped that each auxiliary will be represented. Mrs. Clarence B. Erickson has done a splendid job of administering the affairs of the State Auxiliary during a most difficult period and she deserves congratulations on her success.

The June number of the Journal will carry an account of the Baton Rouge meeting, so those of you who are unable to attend, read the Journal and see what you have missed.

Mrs. James W. Warren,
Chairman of Press and Publicity.

BOOK REVIEWS

Blood Substitutes and Blood Transfusion: Edited by Stuart Mudd and William Thalunier. Charles C. Thomas, Springfield, Illinois, 1942. Pp. 403. Price, \$5.00.

This volume is essentially a symposium, monograph of contributions presented by various authors at the annual meeting of the American Human Serum Association, held in Cleveland on June 2 and 3, 1941. The arrangement of the communications have been slightly altered to permit a more logical approach and to include the results of more recent studies, i. e., up to the spring of 1942.

The book is divided into eight sections, the first of which comprises four chapters dealing with eti-

ology and mechanisms of secondary shock. In the second section are grouped thirteen chapters on the various methods of preservations of plasma and serum by desiccation and by freezing. The third section, consisting of six chapters, is devoted to a discussion of hemoglobin, serum, albumin, and casein digest as blood substitutes. The significance of these various blood substitutes is the main topic of the fourth section, which includes five chapters. The fifth section, comprising five chapters, is concerned with the use of whole blood. Particularly considered in these chapters are such factors as storage, transportation, and administration and the significance of isoagglutinins and

certain blood group specific substances. The sixth section includes four chapters which deal with the experimental and clinical experiences on the therapeutic value of preserved liquid, dried, and concentrated serum and plasma. The seventh section is essentially a summation of the subject, in which the author attempts to consider "in the light" of these contributions, "what principal conclusions may be drawn, what current problems need solution, what prospects open toward the future." The last section, an appendix, is a one-page letter from the Lynphile Cryochem Company, in which is presented their commendable policy of granting royalty free licenses to universities, hospitals, and governmental agencies "for research and experimentation, and for production on a non-profit basis of products derived from human beings, such as serum and plasma."

Actually each chapter is written in the style of an article as it might appear in a current journal. Accordingly, each chapter or article represents the experiences and views of the various authors on their respective subjects. No attempt is made to edit, integrate, or unify the subject matter and the articles are grouped into sections according to the phases considered. Herein lie the advantages and the disadvantages of this volume. The convenience of such authoritative contributions on this timely vital subject in a readily available source is obvious. On the other hand, such a method of presentation permits expression of varied and sometimes conflicting opinions and the reader must decide for himself the best methods and procedures. This is inevitable in view of the current intensive investigations the various phases of this subject are undergoing. The volume clearly reflects this feature and provides the reader with a fairly comprehensive consideration of the most recent developments in blood substitutes.

MICHAEL DEBAKEY, M. D.

Military Surgical Manuals II; Ophthalmology and Otolaryngology: Prepared by a Sub-Committee on Ophthalmology and a Sub-Committee on Otolaryngology. Philadelphia, W. B. Saunders Company, 1942. Pp. 331. Price \$4.00.

This interesting and instructive little volume of 300 pages was prepared by outstanding authors serving under the National Research Council. Its purpose is to simplify the more frequent problems and procedures which confront those responsible for the efficient care of eyes, ears, noses, and throats in the military service.

The ophthalmic section of about 150 pages, is exceptionally well conceived and illustrated. The chapters on functional testing and examinations by Dr. Post, present tersely expressed fundamentals. Acute inflammation by Dr. Gradle, is reasonably complete and well dramatized. Corneal ulcers could have been described in greater detail. Virus infections, which were relatively frequent in World War I, are not specifically mentioned.

The chapter on injuries, including chemical burns, by Dr. Gifford, should be of great help to ophthalmologists facing actual war casualties for the first time. Its summary adds materially. The last, and perhaps best contribution to this section are the well illustrated chapters on local anesthesia and surgical procedures by Dr. Benedict.

The contribution on Otolaryngology is an effort to present in a brief and compact form the principles and essentials of traumatic and war surgery as related to the ear, nose and throat. The various chapters in this section have been prepared and written by prominent specialists who are thoroughly familiar with their respective assignments. The subject matter is well presented, but in many instances the sections are all too brief, leaving much to be desired. However, it is an excellent little book chuck full of otolaryngologic information which should be most useful to the military surgeon.

CHARLES A. BAHN, M. D.

AND

FRANCIS E. LEJEUNE, M. D.

New and Nonofficial Remedies, 1942: Containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1942. Chicago, American Medical Association. Pp. 671. Price, \$1.50.

The new yearly edition of this valuable book has just been published. In general appearance it adheres to the standards of the past. However, the contents of the book have undergone some radical rearrangements. The classification of products heretofore chemical in nature is now largely according to therapeutic use. The typographic style has also undergone some alterations.

The comparative recent introduction of the sulfonamides and the marked increase in the number of vitamin preparations indicates just how well worth while this book can be to the doctor, because under each of these two headings is an authoritative discussion of the sulfonamides, their uses, and likewise of the vitamins. Very complete revisions have been made also of the sections on gonadotropic substances, aluminum compounds, the liver and stomach preparations, and various endocrine preparations. There have been added a few new drugs to those that were already accepted by the Council. These include acetyl-beta-methylcholine, adrenal cortex, aluminum hydroxide gel, normal human serum and plasma, cyclopropane, amylcaine hydrochloride and pernoston sodium.

It is rather difficult to see how a practicing physician can do without this volume. It not only contains the names of the drugs, their therapeutic uses and their pharmacologic preparations, but also at the beginning of each main section there is an excellent discussion of the drugs there listed both from the pharmacologic and therapeutic point of view.

J. H. MUSSER, M. D.

Mind and Its Disorders: By James N. Brawner, M. D. Atlanta, Walter W. Brown Pub. Co., 1942. Pp. 228. Price, \$3.50.

In view of the ever widening range of complexities of our present day existence with constantly increasing mental and physical strain, the aim of Doctor Brawner's book—to equip general physicians to handle mental illness—is a highly creditable and an important one. Even though psychiatry is closely related to internal medicine its mastery requires long, highly specialized training and experience. And it is my thought that one may not safely go beyond certain limits in sacrificing the "obscurity and technicality" of many texts on mental and nervous disorders for the sake of simplicity.

It interests and intrigues me to consider the idea of naming abnormal mental reactions with words which describe etymologically the conditions for which they may be used. Even so, I wonder if this will really simplify matters. And if "hebephrenia" is restricted to apply only to mental disorders occurring at the age of puberty, a new name will have to be found for the hebephrenic type of schizophrenia. "Dementia precox" is, I think properly considered to be a type of mental disorder in which the dementia is precocious in the illness rather than one in which the illness is precocious in the afflicted individual. I see nothing to be gained by substituting "simple deteriorative" and "disorderly" as names for the simple and hebephrenic types of schizophrenia. I think the descriptions of these types, as given in the Statistical Manual for Mental Hospitals, are quite simple and eminently satisfactory. Many neuropathologists believe that demyelization of axonic processes, found in the brains of schizophrenics, is due to preservatives used rather than to effects of structural changes. I fail to see how it will help matters for the general practitioner to learn to differentiate between five types of paranoia which, according to modern psychiatric conceptions, is a rare and somewhat difficult illness to diagnose.

Even if there are other criticisms, after all, I fail to find Doctor Brawner's book as simple and as free from technicalities as he might wish it to be. However, the sections on Alcoholism and Morphinism are excellent.

Undoubtedly Doctor Brawner's manual will achieve quite a readership among those for whom it is intended. And, if they learn and practically apply much of its contents, they will acquire considerable helpful psychiatric knowledge and inspiration.

C. P. MAY, M. D.

PUBLICATIONS RECEIVED

W. B. Saunders Company, Philadelphia and London: Gynecology with a section on Female Urology,

by Lawrence R. Wharton, Ph. B., M. D. Neurosurgery and Thoracic Surgery, Prepared and Edited by the Subcommittees on Neurosurgery and Thoracic Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Manual of Industrial Hygiene and Medical Service in War Industries, Prepared by the Division of Industrial Hygiene, National Institute of Health, United States Public Health Service, William M. Gafafer, D. Sc., Editor.

The C. V. Mosby Company, St. Louis: Operative Oral Surgery, by Leo Winter, D. D. S., M. D., F. A. C. D., F. A. C. S., Sc. D. (Hon.), LL. D., second edition. Endoscopic Surgery, by Roger W. Barnes, M. S., M. D., F. A. C. S.

The Williams & Wilkins Company, Baltimore: Acute Infections of the Mediastinum, by Harold Neuhoof, M. D., D. S., F. A. C. S., and Edward E. Jemerin, M. D., D. S., F. A. C. S.

Alfred A. Knopf, New York: Man in Structure and Function, by Fritz Kahn, M. D., Volumes I and II, translated from the German and edited by George Rosen, M. D.

Paul B. Hoeber Inc., New York and London: Ovarian Tumors, by Samuel H. Geist, M. D.

Grune & Stratton, New York: The Inner Ear, including Otoneurology, Otosurgery, and Problems in Modern Warfare, by Joseph Fischer, M. D. and Louis E. Wolfson, M. D.

Charles C. Thomas, Springfield, Ill. and Baltimore: Neurology, by Roy Grinker, M. D., third edition. Blood Groups and Transfusions, by Alexander S. Wiener, A. M., M. D. Transurethral Prostatectomy, by Reed M. Nesbit, M. D., F. A. C. S. Clinical Roentgenology of the Cardiovascular System, by Hugo Roesler, M. D., F. A. C. P., second edition.

Lea & Febiger, Philadelphia: A Text-book of Pathology, by William Boyd, M. D., LL. D., M. R. C. P., Ed., F. R. C. P., Lond., Dipl., Psych., F. R. S. C., fourth edition.

Funk & Wagnalls Company, New York and London: Flying Men and Medicine, by E. Osmun Barr, M. D.

The University of Chicago Press, Chicago, Illinois: Food Poisoning, by G. M. Dack, Ph. D., M. D.

The Sherwood Press, Cleveland, Ohio: Care and Preservation of Beauty for the Individual Woman, by Charles Lazar, M. D.

Philosophical Library, Inc., New York: Dictionary of Bio-Chemistry.

New York Academy of Sciences, New York: Annals of the New York Academy of Sciences, Volume XLIII, Art. 6, pages 253-426, February 26, 1943, Protein Hormones of the Body.

France Forever, New York: Problems de Medecine de Guerre, by Daniel Cordier. Le Probleme du Cancer, by Charles Oberling.

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THE PRESIDENTIAL ADDRESS*

EMMETT L. IRWIN, M. D.
NEW ORLEANS

It is quite needless for me to mention that medicine as a profession is an essential part of the affairs of society. The physician or his counterpart has existed for ages; even among the savage tribes there has always been one to attend the sick and to care for the injured—yes, one to frighten away evil spirits, the medicine man. The health and well being of the people must be maintained and improved, and it becomes the duty of the medical profession to assume this great responsibility. In playing this all important role in life, the doctor has always enjoyed an elevated position in society; a position of trust; a position of confidence and respect. By the nature of his professional relationships, he necessarily enters into the personal life of his patients. He is present to usher the newcomer onto the stage of the theatre of life and he is present when at last the act is complete and life passes on whence it came.

The good old country doctor, who had to know everything in all branches of medicine and surgery, to diagnose, treat and even cure all maladies, is with us no more. He had to officiate at the births, assist in the baptisms, treat the children and grandma too; he was there to comfort in the hour of burial; he had to know the news of the day; he had to advise on family and neighborly disputes; he had to know when to plant crops and when to reap the harvest;

he had to counsel on educational questions; he had to know who was the best candidate in the political campaign; he had to receive and hold sacred the intimate personal secrets of his patients; yes, he had to prescribe for the dog, the pigs, the horse, cow or cat. He worked long tiresome hours; he worked with a feeling of responsibility, a feeling of duty; he worked without thought of pay; he worked with the love of God in his heart. His compensation was the thought of a service well done and a contribution to his fellowmen. He was kind and he was true to his trust; so much he was called upon to do and he did it so well. His patients loved him, revered him, but this magnificent character has passed from society. He has ceased to exist, and with his passing has gone much of the beautiful atmosphere surrounding him.

As science has advanced, bringing newer discoveries in disease and treatment, the scope of medical practice has so advanced that one cannot be versed in the many branches of medicine, so with the change has come the age of specialization. Rather than a little knowledge about much, the idea is to become deeply and thoroughly proficient in a specific branch of medicine. This has brought to us the specialist, the modern concept of the practice of medicine. His relationship with his patient may not be so intimately personal, but a more efficient service is rendered, for he has at his command the improved instruments of precision to aid in investigations leading to an accurate diagnosis. With this also has come the modern hospital with its laboratories, its improved facilities for rendering aid to the sick, its advanced nursing standard, all

*Delivered at the sixty-fourth annual meeting (business) of the Louisiana State Medical Society, Baton Rouge, May 3, 1943.

insuring a more intelligent handling of the patient.

It is not often realized that industry, commerce and agriculture owe much to the investigative genius of medical men; however, one need not travel far to have this brought vividly before him. Here in our own State of Louisiana, on the banks of the Mississippi and elsewhere, gigantic industries have arisen and flourished. Why? These could not have been possible but for adequate sanitary engineering and control of disease. There was a time when this community, as well as the entire coastal region of the South, truly existed in dreaded fear of many then fatal diseases, chief among which were, typhoid fever, diphtheria, malaria, smallpox, bubonic plague and yellow fever. Through medical research leading to the discovery of the causative factors and proper treatment of these diseases, coupled with adequate sanitary measures, this fear was lessened. More than this, discovery of the causative agents made it possible to devise adequate protection against infection with these germs. The individual could be immunized against the disease. This has eliminated all fear. Today it is relatively a rare occasion that any one of these diseases is seen in our community. The eradication of these dreaded maladies has made it possible for Louisiana to become an active industrial and agricultural section in which its people may enjoy happily all its natural blessings rather than to remain here as a disease infected land feared by all mankind. Medicine is dependent upon industry and industry is dependent upon medicine; so hand in hand they must march together along the highway of life.

Not so long ago those outside the immediate scope of medicine were quite ignorant of facts relating to their bodies and their health, but through publicity and education, people have become more inquisitive, they have penetrated the veil of mystery surrounding themselves. They want to know more; they desire to be advised intelligently of their ailments, of their treatment and how to prevent a recurrence of their condi-

tion. This information is rightfully their due. Along with this free discussion of things as they are, both the profession and the public have become the targets for exploitation by writers, jokesters, and advertisers of various remedies. Many of the remedies are "cure alls", good for anything from dandruff to ingrowing toe nails and everything between. Many of the writings are tainted with propaganda endeavoring to create a feeling of distrust in the profession, to create the idea the people are not getting adequate medical care, and that governmental interference would and will remedy such a defect. Much has been written about the cost of medical care, directing the remarks more or less at the physician. It may be said here that he is not to be charged alone with medical cost. In many instances the doctor receives nothing, whereas, the hospital and nurses receive pay for their services. It must be remembered that it costs money to maintain and operate a hospital and the cost must be borne by those patronizing the institution. Let us stop for a moment to analyze the cost involved in the case of an individual entering the hospital to be operated for one of the more common complaints, chronic appendicitis or hernia.

Private room 7 days at \$6.00.....	\$42.00
Laboratory fee	7.50
Operating room fee	15.00
Medicines, infusions, etc.....	5.00
To hospital	69.50
Meals for nurses 2 days.....	3.00
	72.50
Nurses for 2 days.....	36.00
	\$108.50

In such a case the average surgical fees will run from one hundred to one hundred and fifty dollars. Let us say it is \$150.00, making a total cost for the hospital, the nurses and the doctor of \$258.50. This figure may be reduced \$45.00 by elimination of the private room and the nurses, making a total cost of \$213.50. If the doctor's fees is \$100.00 then the total cost would be \$163.50. Even this may seem a high figure for medical care, chiefly because one feels he has been imposed upon by being sick, so that any figure will seem high for medical care.

However, one does not hesitate to go into debt for an electric ice box, an electric washing machine, an electric sewing machine, a radio or an automobile, anyone of which exceeds the above minimum cost for an appendectomy or a herniotomy. One considers it unfair to place a mortgage upon himself for health's sake. We, all of us, never figure illness in the monetary considerations of our lives. Each believes sickness will not be visited upon him, therefore, no item for illness is included in the budget. The modern way of life is to indulge oneself in all things desired, forgetting the probability of a rainy day ahead. Little does one think a pack of cigarettes a day amounts to \$84.00 per year and if three in a family smokes a pack a day each, and this is the average, the annual cost will be \$252.00. That figure will more than offset the average annual cost of medical care for the family. Of course, the difference is, we want the cigarettes, while illness was not of our choosing. One does not gripe about the cost of the thing he wants or enjoys.

The physician is criticized for the utilization of the so-called sliding scale of charges for the same service rendered two different people. In the first place it is not possible to evaluate adequately in terms of money the service rendered for an ailment. This evaluation is relative. In general, a physician estimates his time, his physical and mental effort and the effect of the treatment given, and arrives at a figure which experience has shown to be fair. Then the patient's financial ability to pay is considered and in one hundred cases to one the charge is reduced and not elevated. Different physicians place different values upon their services for similar conditions. In this he considers his training, his knowledge of the subject, his technical skill and the results obtained. Once the standard is set it is very rarely scaled upward. It has been my experience, the more vexing the case, the more ill the patient, the longer the period of treatment, the more exacting the patient or relatives, correspondingly does the compensation slide down the scale. Of course there are a few isolated cases of

seemingly large fees charged which have come to the public attention because of legal publicity. These are few and far between, but these the public remembers vividly, while the thousands of cases where no charge is made or the fees not collected are considered routine and not worthy of thought.

Today the conditions wrought upon us by the war have involved the physician just as they have entangled all other fields of activity. Many doctors have enlisted their services in the armed forces, thus reducing by nearly one half the number of physicians for the care of the civilian population. This state of affairs will add a burden to the doctor and will require patience on the part of the public. Both must be cooperative and indulgent. It is gratifying to announce that Louisiana furnished 214 per cent of her 1942 quota of physicians to the armed forces. With this changed condition, the service may not be as promptly rendered, but should be just as efficiently administered. The doctors, the hospitals, the nurses and the public must cooperate.

The public must not call physicians unnecessarily, must not wait until night to call, must not request to go to hospital for convenience or for trivialities, and once admitted into the hospital must leave as soon as possible.

The hospitals must facilitate their services so as to reduce the stay in the hospital, must eliminate free cases from pay institutions so that these beds may be available for patients able to pay for service. These free cases should be cared for at the charitable institutions.

The nurses must be willing to work longer hours and exert every influence to facilitate the work of the hospital and physician.

The doctor must work longer hours; he must discourage unnecessary admittance into hospitals, he must endeavor to get patients out of the hospitals in a minimum time, and he must not request non-essential work on patients in the hospital.

Such effort and cooperation will give a more adequate distribution of medical care and service.

Interference in all business seems to be the policy of the present administration in Washington and some suggestion has been hinted that a socialized governmental form of medicine may be advocated. In fact, it is well known that several experiments are in progress now. I do not know about you, but I am not a socialist and never will be one. We are told of state medicine in Europe as an example of its working. Well, we, over here, would be better off if we had less or no part of what they have in Europe. We have too much of it now. Let us not get anymore. It seems they have made pretty much of a mess out of it all. Let us work out our own destiny. Those who wrote the Declaration of Independence and formulated the constitution of the United States did a good job. They gave us a Democracy and we have gone far afield. Let us have it back. At any rate there will be some changes in the practice of medicine to meet the changes in our method of life. These changes definitely should not lean toward government control of medical practice. Such is not the American way of life. There could be no better way to deaden the spirit of competition, the spirit of investigation, the spirit which helps one to endeavor to be better, the spirit to create something new; all of these things are essential to advancement.

In this time of the great emergency all must cooperate to meet necessary changes, but a unified organization must exert every effort to shape these changes, plans and policies into less obnoxious forms. A strong economic organization must be maintained. The medical society must play its part, it must enlarge its scope of activity and view a widened horizon of operation, taking a more genuine interest within its own field.

The State of Louisiana has an excellent medical practice act. In fact, it is one of the finest in the country. It has kept the public free from exploitation by quacks and cults. Louisiana enjoys a good medical profession. Let us keep it that way. The medical profession will do its part by the

public, it has always been conscious of its duties and responsibilities and it will carry on.

HYPOGASTRIC SYMPATHECTOMY WITH SPECIAL REFERENCE TO THE SURGICAL ANATOMY OF THE SUPERIOR HYPOGASTRIC PLEXUS*

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In 1925, Gaston Cotte introduced the operation of resection of the superior hypogastric plexus for the relief of dysmenorrhea, and other types of pelvic pathology, and pain.^{1,2} The procedure was subsequently popularized, and indications for its use extended by many contributions, particularly those of Cotte³ and Leriche.^{4,6} The successful extirpation of the superior hypogastric plexus led to its widespread adoption for the relief of pain arising from such varied pathologic conditions as: (a) inoperable carcinoma of the pelvic viscera; (b) intractable primary dysmenorrhea; (c) cord bladder; (d) intractable cystalgia; (e) spasm of the bladder neck; (f) obstipation of rectal origin; (g) Hirschsprung's disease; (h) pruritis vulvae; (i) vaginismus; dyspareunia; (k) sclerocystic degeneration of the ovaries; (l) kraurosis vulvae; (m) severe persistent postoperative pelvic pain, and pelvic and abdominal pain of obscure origin (see table 1).

TABLE 1

Resection of the superior hypogastric plexus has been employed in the following:

- A. In patients with no demonstrable pathologic changes in the pelvis.
 1. Intractable functional dysmenorrhea.
- B. In patients with slight pathologic changes in the pelvis.
 1. Persistent pelvic pain following previous operation.
 2. Sclerocystic degeneration of the ovaries.
- C. In patients with advanced pathologic changes in the pelvis.
 1. Inoperable carcinoma of pelvic organs.
- D. Disorders of the lower genital tract.
 1. Pruritis vulvae.

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2. Vaginism.
 3. Dyspareunia.
- E. Various disorders of the urinary bladder.
1. Cord bladder.
 2. Spasm of bladder neck.
 3. Intractable cystalgia.
- F. In patients with disorders of function of lower bowel.
1. Hirschsprung's disease.
 2. Obstipation of rectal origin.

The increasing adoption of the procedure of superior hypogastric sympathectomy as indicated by the numerous reports in recent literature created the need for, and gave a marked stimulus to, a study of the available literature on the detailed anatomy, and surgical anatomy of the plexus. The literature was found to contain many conflicting reports, including frequent repetitions of inaccuracies found in older reports, and one is inclined to agree with Robinson's⁷ statement: "It would astonish any student to know how little has been published in regard to the nervous system of the female genitals that is of an original character."

The superior hypogastric plexus was probably first described by von Haller²⁴ and has subsequently been studied by numerous anatomists and surgeons who have given it various names and descriptions. This plexus is rarely a single nerve and always prelumbar, and yet it is commonly and erroneously referred to by the misleading term, "the pre-sacral nerve," (Latarjet and Bonnet.⁸) Recently Davis,^{9,11} Labate¹² and others have stressed the inaccuracy of the term pre-sacral and have come to popularize the more acceptable term of Sappey¹³ "superior hypogastric plexus."

The existence, in the literature, of this wide variety of descriptions of the plexus led to a series of careful studies by a number of recent investigators, but as Davis has so well stated, "Painstaking and exhaustive though this work has been, and possibly because of these factors the variations in the findings of different writers on the morphology of the plexus are even wider than those exhibited by the older authors."

While all types of plexus patterns have been reported, the main conflict lies between those who have reported the predominance or sole existence of "presacral

nerves" and those who have substantiated the finding of a predominance of "superior hypogastric plexuses." An understanding of the development of these differences can be derived from an appreciation of the fact that single nerves, bilateral cords, and a multiple variety of plexus formations occur, and when an investigator has had occasion to report a short series of dissections in which a single type predominates there is apt to be an emphasis on that type, whereas the result of a larger series would at once demonstrate that all varieties reported may occur, and that the plexus patterns predominate. It is also true that superficial and inadequate dissection will frequently reveal a single nerve or bilateral cord, whereas further careful dissection of the same subject will reveal many intercommunicating twigs and may uncover a typical plexus arrangement. In previous communications a detailed description of the connections of the superior hypogastric plexus (fig. 1) and of the morphology of

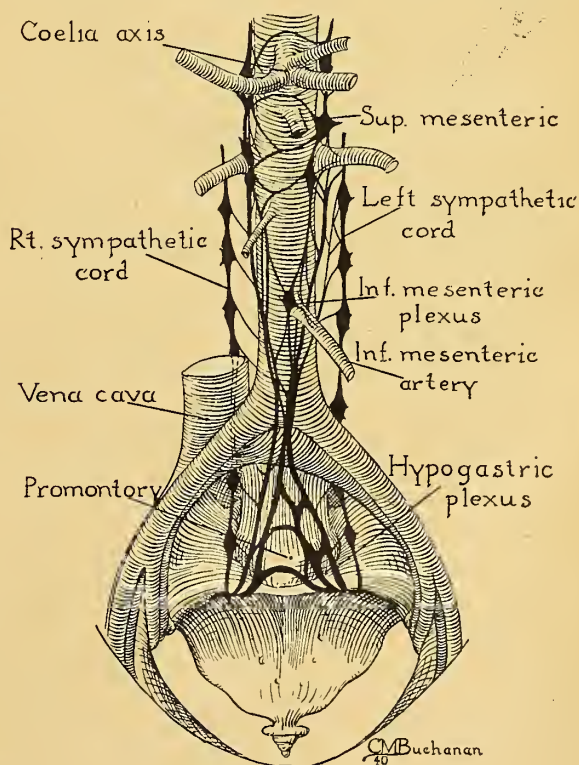


Fig. 1

the plexus has been considered.^{14,15} The variation in the morphology can be appreciated by merely glancing at the illustrations of the plexus contained herein (figs. 2-11) and by considering the percentages

There is one point, however, that I would like to stress; namely, the sensory, or afferent, fibers course in a manner which probably is similar to that of the motor, or efferents, except that they go via the posterior root ganglia. The afferent fibers of all the pelvic viscera transverse the superior hypogastric plexus with the exception of the ovarian and possibly some of the fibers of the fallopian tube which according to the physiologic and anatomic researches of Labate and Reynolds³¹ "have no connection by way of the superior hypogastric plexus, nor do they traverse the inferior mesenteric ganglia or the lower aortic plexus." This observation is of considerable clinical importance, and is borne out by the results of sympathetic nerve block.

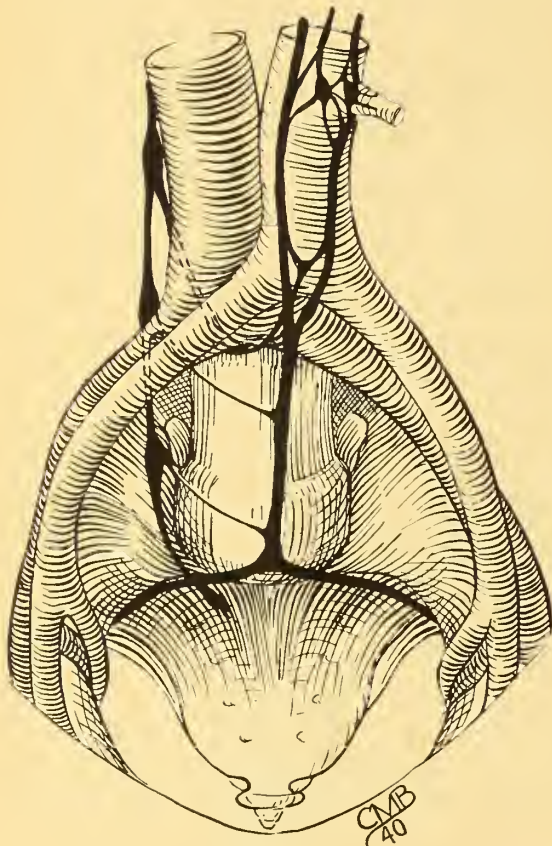


Fig. 2

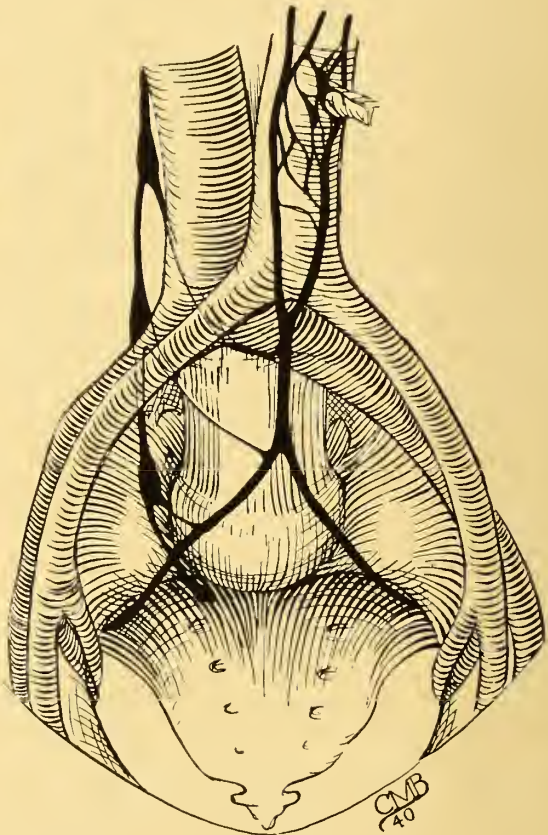


Fig. 3

of each of these types found in 150 dissections of the plexus as summarized in tables 2 and 3.

TABLE II		
<i>Morphology of the superior hypogastric plexus</i>		
(300 dissections)		
	Number	Percentage*
Single nerve	11	4
Bilateral cords	22	7
Plexus types	267	89
	300	100

*Nearest whole number.

TABLE III		
<i>Variations in plexus patterns</i>		
(150 dissections)		
	Number	Percentage*
Flat nerve cord (narrow parallel plexuses)	6	5
Multiple parallel cords	12	9
Narrow triangular plexus	44	33
Wide triangular plexus	52	39
Spider-web patterns	3	2
Arch-shaped plexuses	2	2
Plexuses deviated to the left	13	10
	132	100

*Nearest whole number.

The wider recognition of this contribution will call a halt to the needless (and of course unsuccessful) attempts to relieve pain of ovarian origin by superior hypogastric sympathectomy. The afferent nerves from

the ovary are contained in the periarterial ovarian plexus and reach the tenth thoracic level of the spinal cord (Kuntz³²). The ovarian plexus is found in the suspensory

the trigone; and finally (4) the variations in the pelvic mesocolon.

The interiliac trigone has for its apex the bifurcation of the abdominal aorta, its lateral boundaries the common iliac arteries, and its base corresponds to a line joining the two common iliac arteries at the level of the promontory of the sacrum. The trigone, therefore, embraces an area comprising the lower half or third of the fourth lumbar vertebra, the intervening intervertebral cartilaginous disc and the fifth lumbar vertebra. Its length varies with the level of bifurcation of the abdominal aorta and tends to be slightly more elongated in

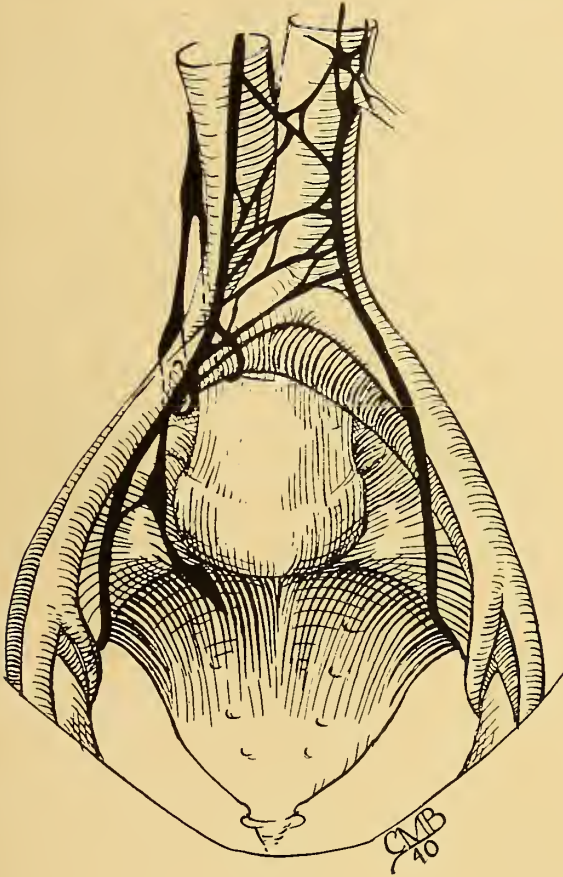


Fig. 4

ligament of the ovary and is joined by an external tubular branch from the fallopian tube. Five or six efferents of the tubular branch course through the broad ligament and reach the lateral aspect of the periarterial uterine plexus.

SURGICAL ANATOMY

A consideration of the surgical anatomy of the superior hypogastric plexus necessitates an appreciation of: (1) the interiliac trigone, in which the fibers of the plexus are always found; (2) the normal contents of the trigone; (2) "abnormal" contents of

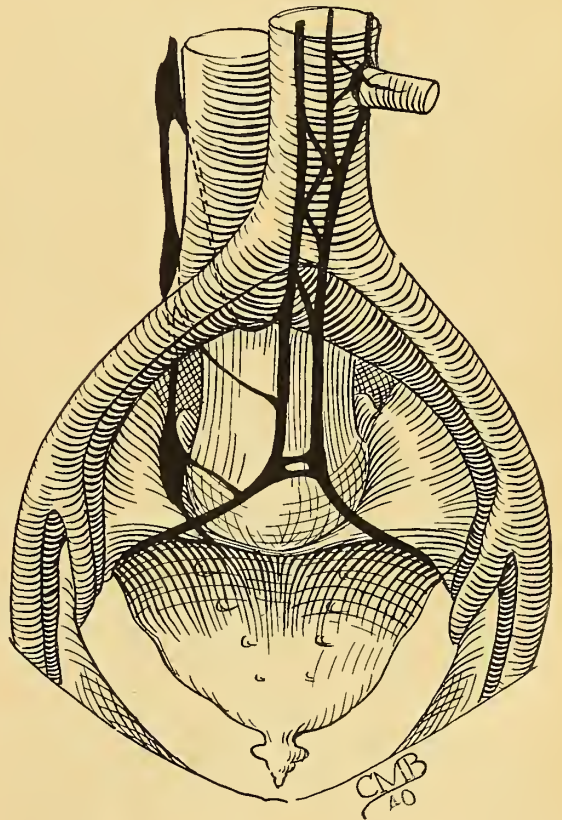


Fig. 5

the male. The width of the base of the trigone averages approximately 7 cm. and tends to be wider in the female. This is in keeping with the normal divergence of the

common iliac arteries from the bifurcation of the abdominal aorta, which occurs at an angle of 60 degrees in the male and 68 degrees in the female. It is of interest to note that the dimensions of the trigone were exactly similar in the negro and white female; however, in males the trigone tends to be narrower and longer in the negro than in the white.

CONTENTS OF THE INTERILIAC TRIGONE

The trigone normally contains the left common iliac vein, the middle sacral artery and veins, and the right ureter. On the left border of the trigone the inferior mesenteric artery and its sigmoid branch enter the root of the pelvic mesocolon. Finally a fairly tough retroperitoneal connective tissue layer, into which the fibers of the superior hypogastric plexus are incorporated, lies within this area.

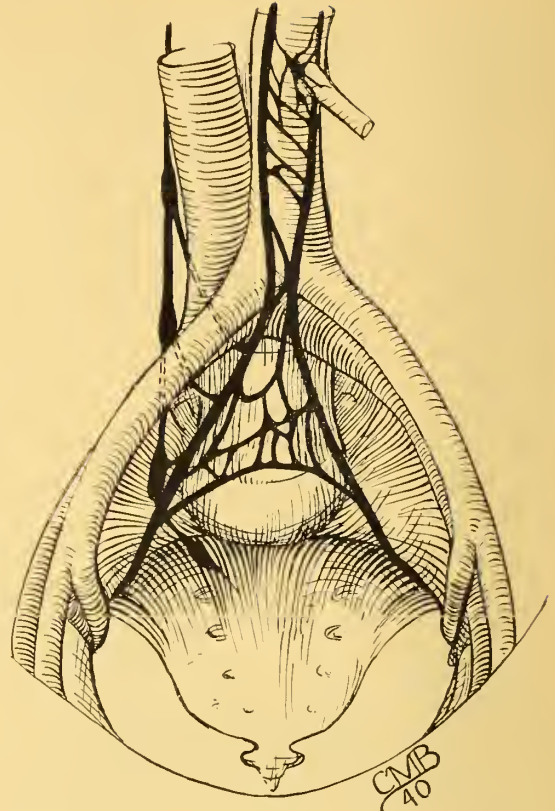


Fig. 7

THE LEFT COMMON ILIAC VEIN

The left common iliac vein runs parallel to the inferior (medial) margin of the left common iliac artery and courses upward and to the right, ascending posterior to the right common iliac artery to join the right common iliac vein in the formation of the vena cava. The left common iliac vein thus occupies a considerable portion of the upper and left aspect of the trigone. The vein is immediately subjacent to the overlying (anterior) layer of fibrous and fatty tissue in which the fibers of the superior hypogastric plexus are found and thus constitutes a surgical hazard of marked importance, especially when it is remembered that the wall of the vein is extremely thin. Fortunately, the fibrocellular layer which is firmly adherent in the remainder of the trigone is very loosely adherent to the vein and may

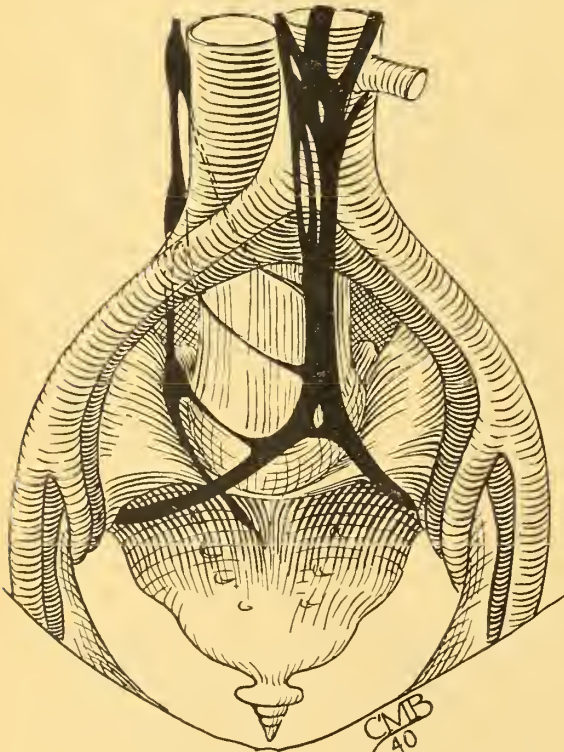


Fig. 6

be easily separated from it. An appreciation of the surgical importance of this fact is heightened when it is recalled that in 9 per cent of this series the entire superior hypogastric plexus is shifted to the left and occupies an area solely in the left half of the trigone being markedly condensed anterior to the left common iliac vein. In performing a superior hypogastric sympathectomy the surgeon working "over" (i. e., anterior to) the vein takes advantage of this loose connection of the nerves to the vein, in an effort to avoid injury to the vessel. Injury to the vein has been reported.¹⁶

THE MIDDLE SACRAL ARTERY

The middle sacral artery and its accompanying veins descend from the bifurcation of the aorta to the tip of the coccyx. The artery passes downward in the interiliac trigone which it tends to bisect, though oc-

asionally it occupies a position slightly in the left half of the trigone. Within the trigone it lies successively upon the intervertebral disc between the fourth and fifth

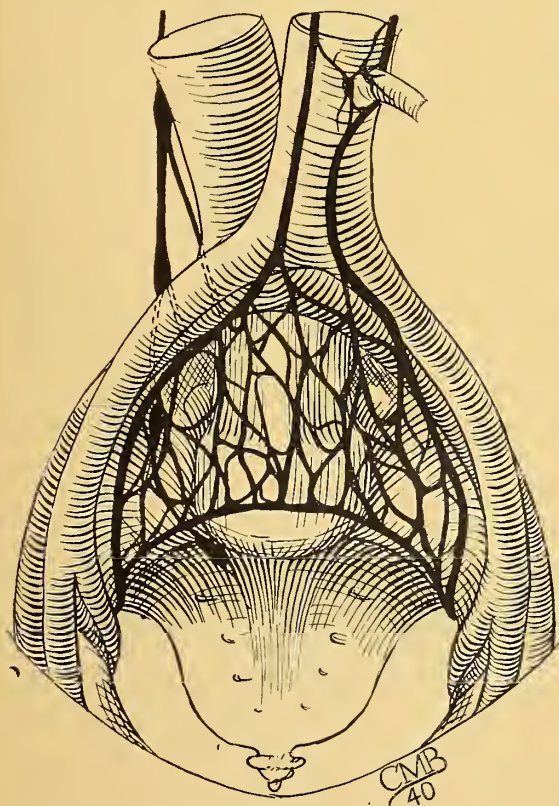


Fig. 8

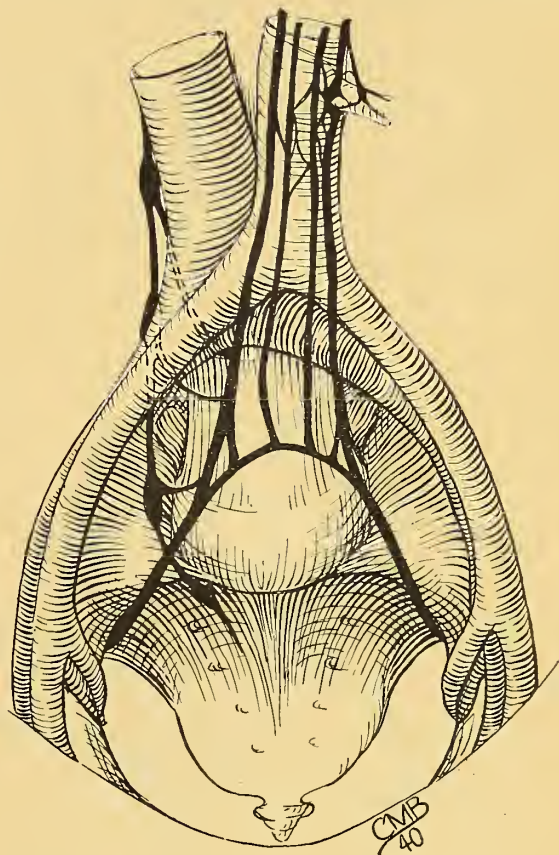


Fig. 9

lumbar vertebrae, and the interior aspect of the body of the fifth lumbar vertebra. It is posterior to the connective tissue layer which contains the nerve fibers, and may be palpated through this layer. The artery is not infrequently confused with a "single presacral nerve" type of superior hypogastric plexus and occasionally has been extirpated for the plexus. It is interesting to note that the artery which is not frequently visually obvious can almost invariably be palpated, while the nerve fibers of the superior hypogastric plexus which are frequently visually obvious through a transparent peritoneum can not be identified by

the palpating finger. When this point is appreciated more fully, the incidence of extirpation of the middle sacral artery for the "presacral nerve" will markedly decrease. An appreciation of the fact that the existence of a "presacral nerve" is in itself a rarity will also cause a cessation of the extirpation of a single cord area, and lead to the universal adoption of the policy of extirpating the entire interiliac fibrocellular tissue for removal of the superior hypogastric sympathetic plexus.

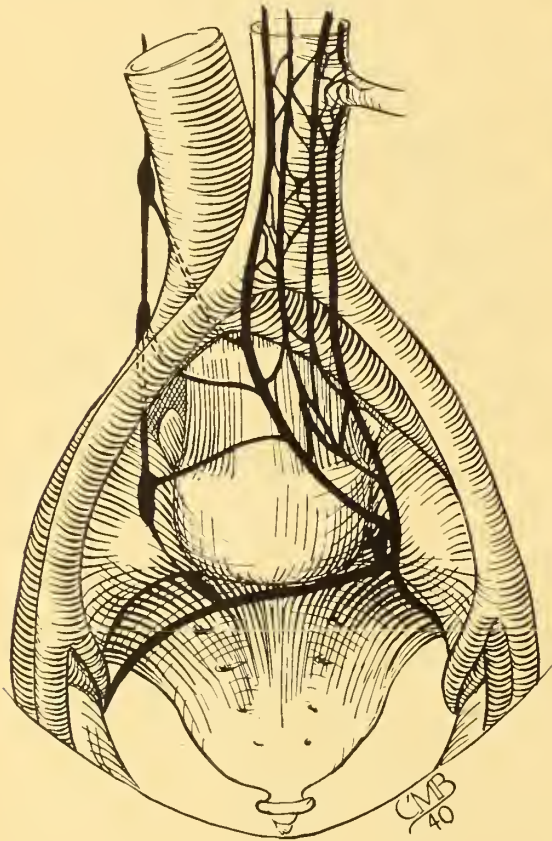


Fig. 10

THE RIGHT URETER

The right ureter is exposed in the interiliac trigone, where it crosses the right common iliac artery just superior to its bifurcation into the external iliac and hypogastric arteries (fig. 12). Fortunately, the right ureter is firmly adherent to the posterior

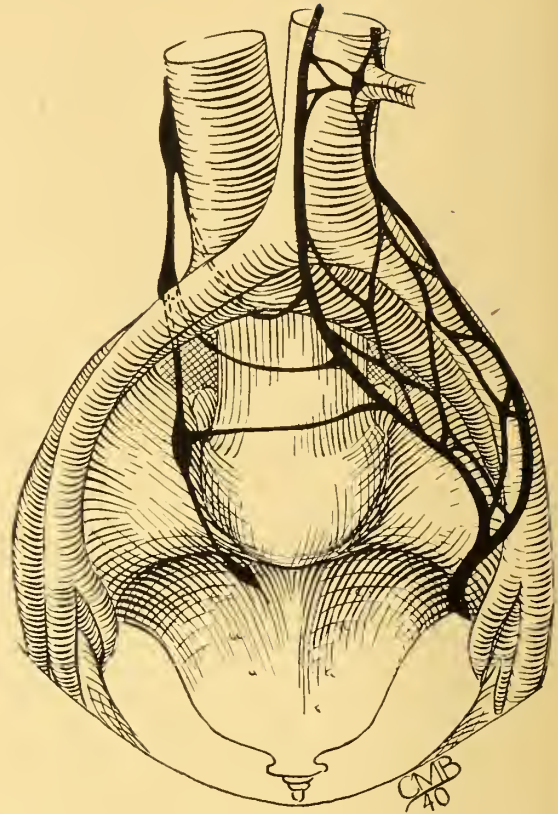


Fig. 11

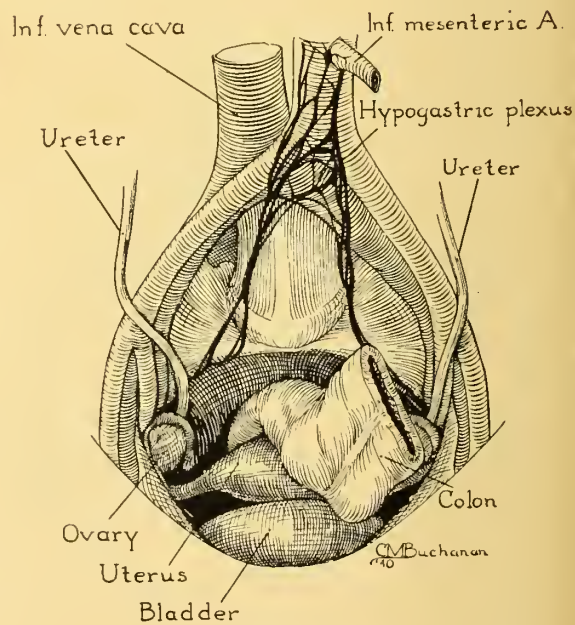


Fig. 12

surface of the peritoneum and is usually retracted with the peritoneum when it is reflected laterally, whereas the nerve fibers are incorporated into and firmly adherent to the subjacent fibrocellular layer of retroperitoneal connective tissue. Thus the ureter can be identified and injury to it avoided. In certain instances in which a type III mesocolon exists (*vide infra*) and it is necessary to retract the mesocolon sharply to the left, or when a type II pelvic mesocolon exists which must be retracted far to the left in order to remove it from the operative field, the ureter may be displaced mesially and be more liable to injury. The left ureter is normally found entirely outside of the interiliac trigone and is rarely subject to injury in superior hypogastric sympathectomy.

THE INFERIOR MESENTERIC ARTERY

The inferior mesenteric artery runs downward from its origin about 3.5 cm. superior to the bifurcation of the aorta, running obliquely and to the left, anterior to the lower portion of the abdominal aorta, and to the left common iliac artery. It descends into the pelvis between the layers of the sigmoid mesocolon to terminate in the rectum as the superior hemorrhoidal artery. Its sigmoid branches run downward, and to the left, to enter the sigmoid mesocolon, and are distributed to the sigmoid. As they enter the root of the pelvic mesocolon, they lie on the left border of the interiliac trigone, and in instances in which a type III mesocolon exists, they assume importance in superior hypogastric sympathectomy since it is necessary to dissect between the layers of the mesocolon to expose the interiliac trigone, and in such a dissection these vessels may be injured.

The interiliac trigone is entirely retroperitoneal. Its peritoneal covering on the right is reflected to the lateral walls of the pelvis and spreads downward to the anterior surface of the sacrum. On the left the peritoneum descends from the abdomen to the rim of the pelvis where it is reflected over the sigmoid colon and the upper por-

tion of the rectum whence it is again reflected to the abdominal wall. The peritoneal layers which have thus ensheathed the pelvic colon approach each other superomedially and fuse to form a true mesentery, the pelvic mesocolon. Between the two layers of the pelvic mesocolon run the vascular and nervous supply of that section of the bowel.

SIGMOID MESOCOLON

There is considerable variation in the length and the position of the line of attachment of the pelvic mesocolon. In general three main types may be described (table 4):

TABLE IV
Variations of the pelvic mesocolon
(150 dissections)

Race	Sex			Type I		Type II		Type III	
		No.	%	No.	%	No.	%	No.	%
W	M	27	82	5	14	2	5		
C	M	67	70	15	16	14	14		
W	F	4	67	2	33	0	0		
C	F	11	79	3	21	0	0		

Type 1. A short mesocolon easily retracted to the left and allowing adequate exposure of the interiliac trigone (fig. 13).

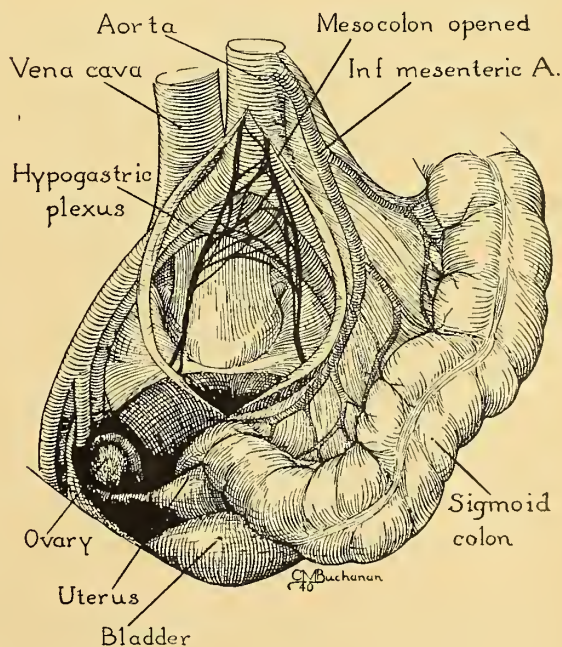


Fig. 13

Type II. A long mesocolon which may readily be shifted or retracted to expose the interiliac trigone (fig. 14).

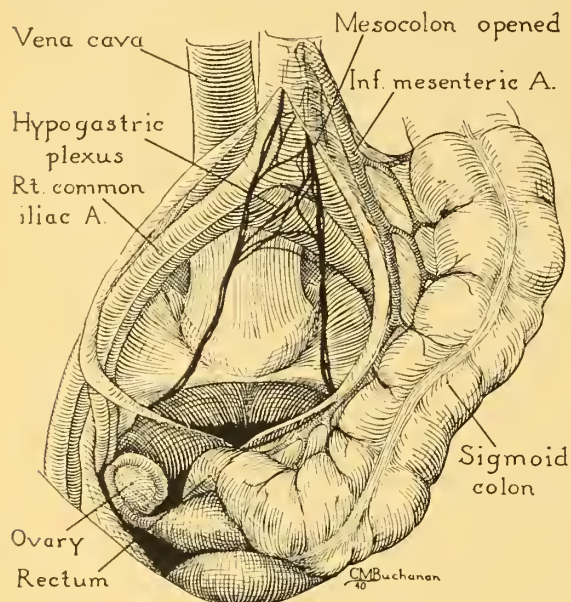


Fig. 14

Type III. A long mesocolon, the leaves of which embrace the interiliac trigone; its attachment being along the midline (fig. 15). This type of mesocolon makes diffi-

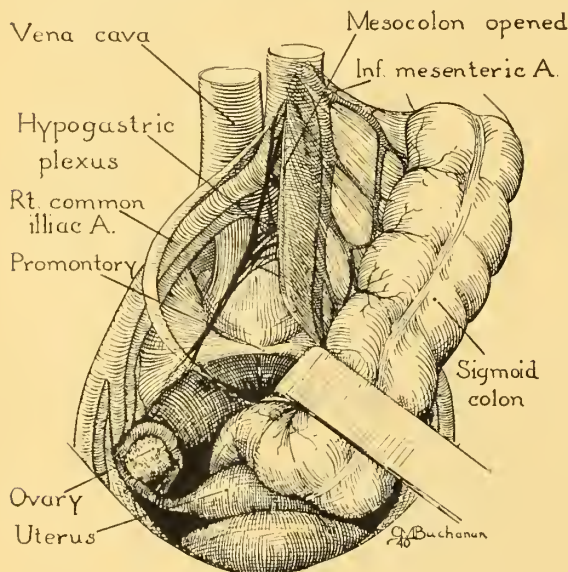


Fig. 15

cult the exposure of the interiliac trigone, particularly when dissection between the leaves of the mesocolon is resorted to in or-

der to expose the superior hypogastric plexus. This type of dissection endangers the vascular and nervous supply which is transmitted through the mesocolon to the bowel it ensheaths. Dissection between the layers of the mesocolon should be avoided and the superior hypogastric plexus exposed by incision parallel to the root of the mesocolon and through both of its layers (Elaut¹⁷).

ABNORMAL RELATIONS OF THE INTERILIAC TRIGONE

In addition to these normal relations of the interiliac trigone, various anomalies have been encountered. In four dissections accessory ureters were found which traversed the trigone. Davis similarly reported occurrences of accessory ureters in three of the 12 operative cases he studied. In several of our dissections in the infant, the right ureter bent rather sharply toward the midline and so was included in the trigone and subject to injury. This finding is confirmed by Labate, who included 52 infants in his report of 75 dissections.

In three of our dissections the transverse duodenum was found anterior to the interiliac trigone. In one of these cases the other abdominal viscera were also ptosed. In the two others the abdominal viscera were normally located with the exception of the duodenum. The left common iliac vein in 14 per cent of our dissections had sharp S-like deviations toward the midline, and projected into the interiliac trigone to well beyond the midline occupying the entire upper and left half of the trigone. In 2 per cent of this series the left common iliac artery had a similar deviation, and occupied a position which would normally be well within the interiliac area. In these two instances the artery was partially covered anteriorly with the hypogastric plexus which in each of these instances was of the spider-web pattern, and occupied an area comparable to the normal trigonal area. In one subject the right and left common iliac veins joined to form the inferior vena cava anterior to the bifurcation of the abdominal aorta. The interiliac trigone in this instance was bounded by the vena cava

superiorly and the common iliac veins laterally, the aorta and common iliac arteries being posterior to these structures. The superior hypogastric plexus in this instance was of the multiple cord pattern and within the venous triangle.

VENOUS ANOMALY IN THE INTERILIAC TRIGONE

The discussion of a very important vascular anomaly which occurs with surprising frequency and which has gained little attention in the literature has been left for last. The majority of investigators are silent on the subject. Elaut states "One must bear in mind a certain anomaly of the blood vessels occurring not infrequently within the interiliac trigone. In our rather small series of cases we met this condition twice, namely: a large, pencil-sized vein arose from the left common iliac vein, proceeded directly across the trigone and joined the opposite wall of the pelvis at a spot close to the bifurcation of the common artery. The veins lay on the periosteum, the nerves cross it obliquely, being adherent in a few places."¹⁷ In the series of dissections herein reported anomalous veins of this type were found 26 times! Seventeen occurred in the male, and 9 in the female, with the distribution even between the negro and white. In several instances the vein was half as large as the common iliac vein (fig. 17) while in

the greater number of cases the vein was of much smaller size (fig. 16). In three in-

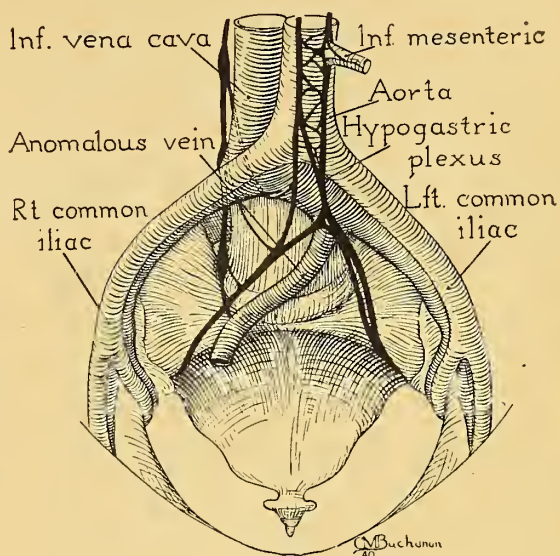


Fig. 17

stances these large veins arose within the substance of the psoas muscle on the opposite side of the pelvis and crossed the interiliac trigone to empty into the left common iliac vein. Many of the smaller veins could be traced directly from the periosteum traversing the interiliac trigone and emptying into the common iliac vein. Several of the veins were in the nature of accessory hemorrhoidal veins which ran retroperitoneally to the left of the midline in the interiliac trigone to empty into the left common iliac vein. These veins are a distinct surgical hazard, and should be given much greater emphasis. Further investigations of their exact origins are in progress.

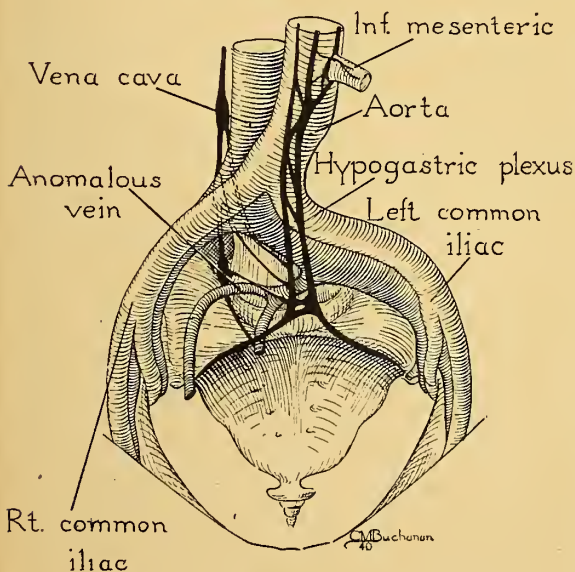


Fig. 16

PHYSIOLOGY OF THE SUPERIOR HYPOGASTRIC PLEXUS

A detailed review of the physiology of the pelvic sympathetic and parasympathetic nerves does not come within the scope of this paper. However, despite a diversity of opinions among investigators, one might reach the general conclusions that sympathetic fibers are vasoconstrictors of the blood vessels of the pelvic viscera and the parasympathetics act in an antagonistic manner. The sympathetics seem to affect the contractibility of the cervix the while

inhibiting the uterine musculature, and parasympathetics causing an emptying or detrursor action on the uterine musculature and relaxes the sphincter like action of the cervix. The action of the sympathetics and parasympathetics on the bladder musculature is comparable.

It is interesting to consider in passing the effect of extirpation of superior hypogastric plexus on menstruation and parturition. Pearce¹⁸ has recently stressed the lack of harm of this procedure in reference to childbirth and concludes that it "has no influence on any part of the progress of pregnancy, in some patients probably only a small proportion the first stage of labor is both painless and rapid or else unobserved." These conclusions are substantiated by the observations of many others (Collins¹⁶, Cotte, Davis, Donaldson,¹⁹ Keene,²⁰ Learmonth,²¹ Fontaine and Herrmann,²² and Wetherell²³).

The menstrual cycle is unaffected by superior hypogastric plexus sympathectomy, though the period immediately following the operation may be prolonged (Fontaine and Herrmann).

The physiology of the superior hypogastric plexus in relation to the urinary system has been adequately stressed by McLellan²⁹ and Learmonth²¹.

OPERATIVE TECHNIC

The technic of hypogastric sympathectomy is relatively simple. The patient is placed in steep Trendelenburg position, a subumbilical midline incision is made, the peritoneum opened, and after a self retaining retractor is placed the intestine is packed back with a laparotomy roll.

The interiliac trigone is exposed. The peritoneum over this area is opened and retracted laterally, the right ureter being retracted with the right flap.

The entire fibrocellular layer of tissue contained in the trigonal area is then isolated on aneurysm needles and excised down to the periosteum, care being exercised to avoid injury to the middle sacral artery and left common iliac vein (see discussion on surgical anatomy). The isolation and re-

moval of this layer of tissue is aided by careful blunt dissection with Bittneur dissectors.

After the fibro-cellular lamina has been excised the area is inspected for bleeding and the peritoneal flaps closed with a continuous suture of plain 00 catgut. The intestine is allowed to fall back in place and the abdominal wall closed in layers.

In severe primary dysmenorrhea cases the ovaries are always inspected for prolapse and suspended if necessary.

COMMENTS ON THE USE OF HYPOGASTRIC SYMPATHECTOMY

The indications for hypogastric sympathectomy have previously been stated and may easily be reviewed in table I. My own experience with the procedure is limited to its use in severe primary dysmenorrhea and for the relief of pain due to pelvic malignancy.

In primary dysmenorrhea, superior hypogastric sympathectomy should be reserved as our last resort and should not be utilized until we have exhausted other forms of treatment, including particularly the more recent contributions in the field of endocrinology and the simpler surgical procedure of D & C and stem pessary.

If utilized with the utmost selectivity, and adequately done, there is no question but that the procedure is beneficial. In pelvic malignancy the procedure may be used with good results providing the metastasis has not become too widespread and has not involved osseous structures. While it will relieve pain, it has been the observation of C. J. Miller, Collins and others that pain will recur after a period of months when the metastases have become more pronounced. It is probable that newer procedures for the surgical relief of pain³⁰ are far more adequate, and deserve wider adoption than superior hypogastric sympathectomy in the relief of the pain of malignancy. However, there are occasions when one performs a laparotomy for the purpose of pan-hysterectomy for carcinoma of the fundus of uterus, and the case is found to be inoperable. In such cases a superior hypo-

gastric sympathectomy should be performed, the patient's condition permitting, rather than a simple closure of the abdomen, since in these cases the extirpation of the plexus will act as a prophylaxis against the occurrence of pain for a considerable period.

SUMMARY

The indications for hypogastric sympathectomy are discussed, together with a brief account of the physiology of the superior hypogastric plexus and results of its extirpation. The technic of hypogastric sympathectomy is briefly described and a report is given of 150 personal dissections of the superior hypogastric plexus: 20 females, 14 negro and six white; and 130 males, 96 negro and 34 white. The surgical anatomy of the interiliac trigone, an area bounded by the bifurcation of the abdominal aorta, the common iliac arteries, and the promontory of the sacrum, which contains the superior hypogastric plexus, is described. Stress is laid upon:

1. The wide variation in the configuration of the superior hypogastric plexus and the predominance of plexus patterns, 88 per cent; the uncommon finding of bilateral nerve cords, 8 per cent; and the relative rarity of the single "presacral nerve," 4 per cent.

2. The disposition of the normal contents of the interiliac trigone; (a) the left common iliac vein; (b) the middle sacral vessels; (c) the right ureter; and (d) the fibrocellular connective tissue lamina which contains the superior hypogastric plexus (fig. 12).

3. The anomalies of the interiliac region: (a) accessory ureters; (b) low lying transverse duodenum covering the anterior surface of the trigone; and (c) the anomalous vein which occurred in 26 dissections to which special emphasis is given (figs. 16 and 17).

4. The variations in length and implantation of the sigmoid mesocolon with a description of the three types encountered (figs. 13, 14 and 15).

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DISCUSSION

Dr. Wilbur C. Smith (New Orleans): I should like to congratulate Dr. Weinstein on this paper. I think he deserves tremendous credit for it. He devoted three and a half years to dissection of the plexus, and knows the gross anatomy of it and can readily demonstrate it. He deserves a great deal of credit. Personally, I think his paper on the superior hypogastric plexus is the best one that has been published in gross anatomy since the appearance more than three years ago of the paper by Dr. E. Zollicoffer Browne on the anomalies of the hepatic and cystic arteries. I am not particularly interested in whether there are 781 particles of fuzz on the left hind leg of a beetle or 782, but I am particularly interested in papers on gross anatomy that are in any way an aid to surgery. I again want to congratulate Dr. Weinstein on his paper.

Dr. Hilliard E. Miller (New Orleans): I did not rise to discuss the problem of dysmenorrhea from an anatomic standpoint. Dr. Weinstein's studies on that subject are, I believe, the most extensive in the literature, and I am glad that, with Dr. Wilbur Smith, I have been able to offer some encouragement in his work.

I particularly want to discuss the problem of dysmenorrhea from the clinical standpoint. The patients who suffer from painful menstruation fall into two distinct classes. One class consists of patients with demonstrable pelvic lesions, such as fibroids, cysts, diseased adnexa and polyps. Their trouble is of extrinsic origin and relief is easily obtained; one merely corrects the cause. The patients in the second class, in which we are most interested, suffer from primary or intrinsic dysmenorrhea and no one, so far as I know, has ever satisfactorily explained why they have pain. In a large percentage of cases the pelvic findings are perfectly normal. The uterus is normal, the cervix is normal, the vagina is normal, the adnexa are normal—and yet the patients are incapacitated every month.

Maldevelopment of the genital tract is not a universal explanation. More than half of the patients in this group, although their periods may be irregular or scanty, do not suffer at all. The remainder, however, do suffer, their ordeal varying from mere acute discomfort to pain so intractable that something obviously must be done about it.

This is the group in which presacral sympathectomy has its widest field. I am in complete accord with Dr. Weinstein that it should be a last resort, but I also believe that there is a small number of patients in whom it is definitely indicated. I have personally done the operation on nine women, who have been followed for periods varying from one to six years, and in all of whom every other possible form of therapy had been tried without results. Seven of these young women are entirely well. They do not know, so far as pain is concerned, when their periods begin or when they end, and they follow a routine of life that formerly was impossible for them.

The eighth patient has had about 40 per cent relief, and the ninth patient has had no relief at all. In the latter instance I am inclined to think that I missed some of the fibers in the presacral plexus. Since Dr. Weinstein's report on the variations in the presacral plexus of nerves, I have been careful in such operations to go completely out to the ureters into the interiliac space when I am making the exposure, and I am also careful to dissect out all the fat within this space.

If maldevelopment of the genital tract is the cause of dysmenorrhea, it is reasonable to assume that an endocrine factor is also an underlying cause. Yet I do not know of any man who has shown that he can consistently relieve these women by any of the presently available hormones. Some have surmised that dysmenorrhea is caused by an imbalance of the estrogenic-progestin function of the ovaries, but the use of these hormones has not produced constant or even significant results. The estrogenic factor is supposed to initiate uterine contractions and the rationale of progestin therapy is to counterbalance it. The rationale may be correct, but the therapy is usually ineffective, and the same reasoning, in reverse, holds for the progestin factor.

On the other hand, I am personally convinced that there is some endocrine imbalance underlying dysmenorrhea, and I make the statement for this reason: The agent which has proved most effective in my own experience is plain thyroid extract. Why it is effective in dysmenorrhea I do not know, and nobody else, so far as I know, has explained it, or explained why it is also effective in the relief of menorrhagia, metrorrhagia and oligomenorrhea.

Whether the effect is primarily on the ovary, or whether thyroid extract acts primarily on the pituitary gland and secondarily on the ovary is not clear. When the estrogen-progestin balance is normal, the timing of menstruation, so to speak, is as perfect as the action and interaction of the cylinders under an automobile hood. The woman knows when she will menstruate, how long she will menstruate, and how many pads she will use. Thyroid extract often produces almost as absolute clocking, and my own experience is that it is the best regulator now available for the correction of all the anomalies and abnormalities connected with

the menstrual act. I seem to be making extravagant claims for a single agent, but most practicing gynecologists will support what I have said.

I want to emphasize another point, that surgery and endocrine therapy should not be employed until similar measures have been given a trial. Studies carried out in many private schools, in mass groups, support that stand. With their routine of living regulated by the ordinary rules of hygiene concerning food, clothing, exercise and rest, a surprisingly large number of girls who enter the school with dysmenorrhea find themselves completely relieved within a few months or a year merely by the observance of these simple rules.

Whatever may be the cause of dysmenorrhea, probably 75 per cent of all women suffer from it in some degree, and to the gynecologist it is an ever-present problem. Studies such as those reported will aid materially in its solution.

Dr. W. H. Byrne (New Orleans): Dr. Weinstein brought out the fact that there is a relatively high incidence of anomalous veins in the interiliac trigone and in so far as previous discussions of the anatomy of the plexus is concerned this point has not been mentioned with any degree of frequency. Yet in the past three years, two gynecologists, one of this city, Dr. Conrad G. Collins, and Dr. Albert M. Volmer of San Francisco, have reported their experience with such vessels, encountered in the process of resecting this plexus. Veins in this area may be torn or cut during the dissection or attempted ligation resulting in considerable blood loss and trauma to the common iliac vessels of the vena cava. That is the principal source of danger in an operation of this type and if one is familiar with the fact that these anomalous veins do occur he should be on the alert and try to avoid or minimize such trouble.

Another fact to be considered is that this plexus does not serve as part of the innervation of the tubes and ovaries. A method of differentiating between the origin of pain, whether uterine or tubal and ovarian, was explained in 1936 by Dr. P. G. Flothow of Seattle. He described a technic of blocking the superior hypogastric plexus, which is a modification of the Lebat type of block. Furthermore, he found that when success was obtained by this method there were sufficient clinical manifestations noted by the patient, principally in the form of increased heat in both lower extremities, which could be used as criteria for a satisfactory block. Relief of pain in this manner will also prove whether or not it was due to uterine or adnexal pathology. In those cases where Dr. Flothow failed to produce the sensation of increased heat in both lower extremities he also failed to get satisfactory results with the block.

I believe that before resorting to this type of operation for the relief of pelvic pain it will be of considerable value to attempt such a block and determine first if the pain is definitely of uterine origin, then when proceeding with operation be

careful and avoid undue difficulty with these anomalous veins if they are present in the interiliac trigone.

Dr. Weinstein (In closing): I greatly appreciate the many comments of the discussors. I agree with Dr. Miller that hypogastric sympathectomy has a definite though limited place in the therapy of primary dysmenorrhea. It should be reserved as a treatment of last resort for those cases which have failed to improve when we have exhausted simpler procedures, such as routine hygienic care, diet, exercise, endocrine therapy, D&C and stem pessary. In the use of endocrine therapy I should like to emphasize the importance and value of thyroid, and in a limited number of cases, of progesterone. I agree fully with Novak when he states that hypogastric sympathectomy in dysmenorrhea is an admission of failure, and a gynecologist who can report a large series of personal cases probably has not given his patients the benefit of full trial of other therapies.

I am glad Dr. Byrne mentioned the differentiation of ovarian and uterine pain. I think that the failure to exercise careful selection of cases accounts for some of the reported failures with hypogastric sympathectomies. The ovarian innervation which is confined to the periovarian arterial plexus is quite independent of the superior hypogastric plexus and patients with pain of ovarian origin will not be relieved by hypogastric sympathectomy. In addition to the block of Flothow mentioned by Dr. Byrne, Davis in England has suggested the novocaine or alcohol block of the Frankenhauser ganglia being not only diagnostic, but curative in some cases.

HUMAN SERUM AND PLASMA IN DISEASES OF CHILDREN*

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Human serum and plasma have found an especially secure place as therapeutic agents in diseases of children. The relative lability of the infant's fluid matrix, his lack of immune response to many infections, and the nature of disturbances peculiar to his age, combine to pose a threat which can often be countered most effectively by physiologic constituents of blood.

Transfusions of citrated fresh whole blood were formerly employed for all these

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conditions, and, of course, they are still used effectively in instances where oxygen carrying capacity of red blood cells is needed. While stored blood has been tried as a substitute for fresh blood, it has been shown to be relatively unstable. There is a gradual drop in erythrocytes, leukocytes, prothrombin, complement, and in antibacterial properties.^{1, 2, 3, 4, 5} Diffusion of potassium from the red cells makes its use especially undesirable if renal or hepatic insufficiency is present.⁶

Serum and plasma are indicated and superior to blood in acute and chronic infections, in states of hypoproteinemia, in severe disturbances of fluid equilibrium, and in conditions due to increased capillary permeability caused by burns, trauma, and hemorrhage.⁷

Interest in physiologic protein substitutes has been especially stimulated by the more recent investigations on the physiology of fluid equilibrium and shock.^{8, 9, 10, 11, 12, 13}

Plasma, the fluid portion of non-coagulated blood after removal of blood cells, is made up of albumin, globulin, fibrinogen, water, electrolytes, antibodies, and other organic constituents of blood. Although plasma is more popular as a blood substitute in this country, serum, which is almost identical, save for the removal of fibrinogen by clotting, is easier to prepare and has been the agent of choice for convalescent antibody transfer in children. Convalescent serum or a hyperimmune modification of this has been employed in many acute infections but it has been found especially effective in the prophylaxis and treatment of scarlet fever, measles, pertussis, and epidemic parotitis.

It is probable that a pool made up of specific sera collected from scarlet fever patients in a given epidemic will contain many specific antibodies against the type of hemolytic streptococci most commonly encountered in that epidemic. For this reason it is important that convalescent sera be collected early in an epidemic, pooled, and used for therapeutic purposes while the or-

ganisms against which the antibodies have been elaborated are still predominant. Type specific antibody, whether produced by, or transmitted to a patient, is an important part of the recovery mechanism from streptococcal disease. When conferred intravenously to the sick child, who may be incapable of efficient antibody production himself, it quickly combats toxemia and inhibits bacterial invasion.¹⁴

Reports on the use of convalescent measles serum have contributed to a vast medical literature. However, it was not until effort was made to collect, pool, and preserve a large supply of serum that reports of controlled experiments began to appear, and its value became generally acknowledged. It is now recognized as the most effective agent available against a disease which has appeared as a real menace during time of war.

Success with convalescent serum in measles led to attempts toward modification of whooping cough. Bradford¹⁵ contributed much fundamental research to this problem. He showed that intratracheal inoculation of *H. pertussis* into a mouse would produce consistently uniform findings in the lungs. He made use of investigations of humoral immunity in pertussis chiefly directed toward studies relating to specific agglutinins and complement fixing antibodies.

Because of the increase in the opsonocytaphagic reaction in the blood of individuals who have a history of pertussis and were subsequently hyperimmunized, this procedure has been recommended to make available a group of donors for hyperimmune convalescent serum. This hyperimmune serum protected young mice against death from experimentally induced infection with *H. pertussis* when the serum was injected at the same time that the organisms were administered.¹⁶ Thirty-two from a group of 40 treated mice survived, while only four survived from a group of 40 controls. The degree of lung involvement in the treated group was definitely less than in the controls. The difference between

the groups in the number of mice showing negative lung cultures at autopsy was also statistically significant.

Bradford tested the effect of hyperimmune human serum upon the humoral antibody titre in human pertussis. A group of 19 infants and three children in the early stage of pertussis were treated by the intramuscular injection of from 10 to 40 c. c. of hyperimmune human serum. In 19 of the group the opsonocytaphagic reaction and agglutinin titres of the blood were determined immediately before and after serum injections.¹⁷ The humoral antibodies as measured by these methods were increased to levels comparable to those characteristic of convalescence. A definite decrease in the absolute number of lymphocytes of the blood was noted in 15 of the 22 cases, and there was marked improvement in the clinical course of the disease in 18 of the 22 cases treated with the serum. Although evaluation of serum in whooping cough is most difficult from a statistical standpoint, results with the use of hyperimmune serum among exposed or afflicted infants have been dramatic in our experience. It is prepared in our laboratory from the blood of medical students who give a history of pertussis and who have been inoculated at frequent intervals with Sauer's vaccine during a period of one year.

Mumps convalescent and pooled normal adult serum have been used by McGuinness, Stokes, and Mudd.¹⁸ Results in comparative studies with controls strongly suggest that it has prophylactic merit when used promptly after exposure.

A favorite form of treatment used by many physicians in cases of bacteriemia is the administration of transfused blood. The transfusion is generally given not because the patient needs blood cells but because he needs the immune substances contained in the transfused blood. It has been observed many times that patients with bacteriemia show a slight increase in the complement titre of their blood at the onset of the illness. The amount of complement decreases as the infection progresses and with recovery gradually returns to normal. In severe

cases, the complement continues to decrease, and many severely ill patients show a complete absence of complement. Most of the patients dying of bacteriemia show a great decrease or a total absence of complement in their blood. It would therefore seem that complement constitutes a very important immunologic factor in combatting infection.

It has been shown by Cadham¹⁹ and others that patients transfused with large or moderate amounts of whole blood suffer a loss of complement. When serum alone is administered, on the other hand, complement actually increases. From this it may be assumed that decrease in complement following whole blood transfusion is due in some way to the cellular portion of the blood. Moreover, it seems that transfused serum actually stimulates the production of the recipient's complement. Complement titres taken following transfusions with serum become higher than can be accounted for by the complement contained in the transfused serum alone. It is suggested therefore, that additional complement is produced by the patient himself, due to the stimulating action of the transfused serum.

PROTEIN DEPLETION OF THE BODY STORES

It is well known that chronic infections often cause a depletion of protein in the body. As in acute infections, where protein levels may have a bearing on survival,²⁰ the influence of chronic infection is similar even though the results are less dramatic. Moreover, a cycle is often initiated during chronic infections in which diminished protein intake, excessive loss of protein, hypoaminoacidemia, and negative nitrogen balance may result. Plasma or serum can materially help to combat chronic infection in two ways in children: (1) by its non-specific effects on metabolism and (2) by conferring antibodies contained in adult plasma pools. Infections in the very young are often accompanied or overshadowed by the effects of hypoproteinemic states.

Disturbances of fluid equilibrium, especially dehydration, in the sick child are frequently of greater importance than the un-

derlying disease itself. This is true because of the relatively greater susceptibility of children to the effects of changes in volume and character of body water.

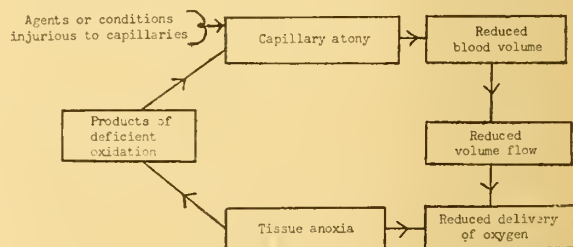
The small child has a greater percentage of water in his body than the adult and a greater partition of this is extra-cellular where it serves to maintain plasma volume. He may, therefore, lose a proportionately greater amount of fluid during dehydration. If, following vomiting, diarrhea, or the pronounced febrile response so common to the child, he loses water and salt to the point where replacement of these does not bring about maintenance of his fluid stability, it is because adequate quantities of these are not retained in the blood stream. There then begins a cycle of diminished blood volume, hemoconcentration, impaired renal function, and loss of electrolyte balance. If protracted vomiting has been the prominent symptom and alkalosis is indicated by the occurrence of shallow respiration, hyper-tonicity, and lack of chloride excretion, the therapeutic need is saline solution, calcium gluconate or chloride, and plasma intravenously. If, on the other hand, diarrhea, with loss of basic intestinal secretions has occurred, reduction in plasma bicarbonate may have reached an extreme. Hemoconcentration and stagnation then cause impaired renal function. Exhaustion of carbohydrate reserve and anoxemia permit intermediate products of fat metabolism and acids to accumulate in the blood. The resulting acidosis may then be attended by an increase in capillary permeability and manifested by stupor, hyperpnea and symptoms of shock. Such a seriously altered physiologic state can best be corrected by the intravenous administration of glucose and buffered sodium lactate or bicarbonate, followed by a protein colloid such as plasma. Restitution of plasma volume will tend to increase renal function. Fluids containing buffer substances may then be held in the blood stream so that a sustained trend toward proper water and electrolyte balance can be achieved.

Nutritional deficiencies are intimately concerned with a lack of protein. Studies

reveal clearly that reduced plasma protein is directly responsible for nutritional edema in children whether the primary cause of the hypoproteinemia is prematurity, inadequate feeding, coeliac disease, or any process which interferes with normal fabrication of protein.²¹ When plasma protein and volume are restored, edema promptly disappears. The relative frequency of this condition and its association with malnutrition has been especially emphasized by Dodd.²² There is no doubt that nutritional hypoproteinemia at or slightly above the "edema level" is very common in delicate babies and children with deficiency diseases, and that a prompt restoration of normal levels may alter an apparently refractory clinical course.

From a relatively simple beginning these altered physiologic conditions, accelerated by infection or other factors, often rapidly approach a critical state. Much of the mechanism of secondary shock then develops.

More dramatic and urgent than secondary or medical shock is the rapidly progressive primary shock precipitated especially by trauma, hemorrhage, and burns. Moon⁷ and others have shown that plasma escapes through the capillary walls into the tissues in all types of shock and that diminution of blood volume results. While the intimate nature of shock is not yet entirely clear, and some disagreement still prevails concerning the neurogenic, vasogenic, and hematogenic roles involved, the following schematic presentation by Moon serves to present many of the stages in its pathogenesis.



Increased permeability of the capillaries and plasma loss are attended by reduced blood volume, capillary dilatation, hemocy-

toconcentration, lowered venous pressure, reduced cardiac output and volume flow, anoxemia, and tissue anoxia. If these changes continue and are not recognized by the finding of a high hemoglobin, red blood cell count, hematocrit, and specific gravity of the blood, a resulting fall of arterial pressure and an irreversible state develop rapidly. Plasma can interrupt this process by increasing the circulating blood volume and improving vascular tone.²³ Fluid is thus drawn back from the tissues due to increased osmotic pressure, and the improved blood volume helps to reverse the cycle. Some observers prefer concentrated plasma for this purpose.²⁴

Restoration of serum protein values for elevation of osmotic pressure of blood to reduce localized or generalized collections of intracellular fluid has been attempted in nephrosis.²⁵ Patients with a favorable response lose weight in a manner similar to that in which weight is lost in spontaneous renal crisis, which may mean that a similar process is initiated by this type of treatment. Cases with a nephritic component do not show such a response.

Hughes, Mudd, and Strecher²⁶ have reported a series of cases in which concentrated serum was used for the reduction of increased intracranial pressure. They point out that concentrated blood serum approximates the theoretically ideal hypertonic solution for reducing intracranial pressure. It is essentially a solution which has a high osmotic pressure and contains solutes which will remain in the blood vessels to exert a continued osmotic effect.

Experiments on dogs were conducted by Wright and Bond²⁷ in which cisternal puncture was done to obtain continuous readings of intracranial pressure. Their results indicate that a single administration of concentrated serum may produce lowering of increased intracranial pressure for as long as twenty hours.

Investigators²⁸ of the causes of disruption of abdominal wounds have pointed out that experimentally and clinically a state of hypoproteinemia may be one of the factors which retards normal healing. Dogs in

which a state of protein deficiency was induced were subjected to abdominal laparotomy. In most of these, disruptions of the wound or failure of the incision to heal was observed. Subsequent experiments demonstrated that normal healing of the wound occurred when the hypoproteinemia was controlled by intravenous infusion of plasma. Concentrated plasma is thought to have two advantages; it rapidly corrects the deficiency of blood proteins, and, being a hypertonic solution, increases the osmotic pressure of the blood and tends to overcome any tissue edema which may be present.

Rapid extensive hemorrhage causes dilution of blood, loss of extra-vascular fluid, dehydration, and distorted fluid equilibrium. Since immediate need in severe hemorrhage is restoration of blood volume and pressure and because typing and cross-matching are unnecessary²⁹ when pooled plasma is employed, it would seem more expedient and safer to use plasma for the hemorrhagic emergency and replace blood cells by transfusion subsequently, if the hemoglobin level is appreciably reduced.

Obviously, no comprehensive formulae can be evolved to determine the requirement of all factors in a mechanism so complex and precipitated by so many causes as the failing circulation of the sick child. Clinical judgment to determine the need for specific and group antibodies, for fluids, for electrolytes, and for protein sufficient to maintain an adequate circulating blood volume are all important. Determination of plasma protein, the number of red blood cells, the hemoglobin, hematocrit, and specific gravity of the blood are invaluable adjuncts. Katherine Dodd has stated the principle exceedingly well: "In a child taking inadequate food and not receiving transfusions, a gain in weight, accompanied by an increase in hemoglobin and a decrease in plasma protein, means that plasma fluid and protein are being lost from the blood stream."

The dosage of human plasma and serum must depend on the weight of the child and the seriousness of the condition for which it is to be employed. For the transfer of

specific antibodies in prophylaxis and treatment of disease, doses of 10 c. c. to 100 c. c. are usually given. In chronic infections any hypoproteinemic states, doses should be gauged to accomplish physiologic levels of plasma proteins. For the sake of illustration, a computation of approximate protein need in a 10 kilogram baby whose plasma protein level is 5.3 grams per 100 c. c. of blood is appended.

Plasma protein (patient) = 5.3 gm./100 c. c. blood
 Plasma protein (normal) = 6.7 gm./100 c. c. blood
 deficit = 1.5 gm./100 c. c. blood
 Weight of patient = 10 K
 Blood volume (8%) = 800 c. c.
 Deficit 8 X 1.5 = 12.0 gm.
 12.0 gm. = 175 to 200 c. c. plasma (approx.)
 (X Factor = Depleted reserve
 Additional ((X Factor = Maintenance

Plasma and serum are usually stored in the refrigerated, the frozen, and the desiccated states. Strumia and McGraw,³⁰ who have studied the advantages and disadvantages of each method of preservation, have summarized these as follows:

"1. Regardless of the means of preservation employed, plasma must be safe from the standpoint of (a) bacterial contamination, (b) presence of flocculent protein precipitates, and (c) unusually high isoagglutinin titre.

"2. The manner of preservation greatly influences the survival of various specific elements of plasma. To summarize: (a) Preservation of plasma in the liquid state at room temperature (approximately 25° C.) causes very little flocculation but rapid loss of prothrombin and complement. It should be filtered before use, and the danger of rapid growth of a chance contamination must also be kept in mind. The value of such material is limited almost entirely to the total protein content. (b) Preservation of plasma in the liquid form at 4° C. maintains a fair quantity of prothrombin and complement for a period of approximately fifty days, but causes maximal flocculation within a few hours. Filtration is essential and the danger of bacterial growth from a chance contamination is not eliminated. (c) Preservation of plasma in the dried

state effectively prevents bacterial growth and flocculation, but the regenerated material has lost almost all the prothrombin and a portion of the complement when drying involves quantities of 250 and 300 c. c. It need not be filtered and permits concentration if desired, but it is of little value for hypoprothrombinemia. (d) Preservation in the frozen state prevents bacterial growth, and flocculation and at the same time insures almost complete preservation of all specific elements, including prothrombin and complement. After proper thawing it need not be filtered, and the therapeutic value is practically equal to that of freshly prepared plasma. Thawing must be rapid in the water bath at 37° C. and thereafter, until administered, the liquid plasma must be kept at room temperature.

"3. The loss of essential elements occurring with preservation of plasma in the liquid state or in the dried form obviously limits the therapeutic application of plasma thus preserved. Plasma maintained in the frozen state and properly thawed is almost identical to the original material."

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DUODENAL DIVERTICULITIS, ACUTE AND CHRONIC*

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and
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NEW ORLEANS

A complication to duodenal diverticulosis introduced the entity to the literature; Chomel in 1710 described a duodenal pouch containing calculi. Contended rare in early reviews, perfection of roentgenologic observation (Case, Cole and Roberts, Andrews, Spriggs and Marxer, Larimore and Graham, Wheeler, Edwards, and Weintraub and Tuggle) and careful necropsy demonstration (Baldwin, Nagel, Horton and Muella, and Grant) have proved diverticula of the duodenal segment relatively frequent. The revelation that they were more than anatomic curiosities awaited the descrip-

tion, by Bassett in 1907, of fatal complications. Nevertheless, in relation to their frequency, they are seldom associated with demonstrable pathology. The actual infrequency of complicating diverticulitis is emphasized by the dearth of surgically managed instances reported. A search of the literature revealed only thirteen case reports since Basch's surgical achievements of 1917.

Our experience with three instances of diverticulitis, two acute and the third chronic, therefore, seems unusual and justified our report of these instances with comparative statistics. We restricted our study to the past three years, for we wish better to evaluate our work as done under a single roentgenologist and further, it is only in recent years that radiographic diagnosis has been sufficiently accurate.

CHART 1

DUODENAL DIVERTICULA IN 2297 GASTROINTESTINAL
PATIENTS WITH 789 G. I. SERIES

Number	Single	Multiple	Retention	Age			Duodenal Location			
				-40	40-50	50	1st	Vaterian	2nd	3rd
42 (5.3%)	40	2	12 (52%)	6	13	13	3	18	11	13

*Read before the Orleans Parish Medical Society, October 12, 1942.

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Although varying considerable in published reports the incidence of diverticulosis appears to be about 1.6 per cent. In our group the 5.3 per cent emphasizes the accuracy of our roentgen studies.

Kellogg showed diverticula occurring singly in 80 per cent of cases; our groups show 40 of the 42 instances, or 95 per cent.

The statistics of Linsmayer show occurrence beyond the age of 50 in 36 of 41 cases, Kellogg's figures show 65 per cent above the half century mark. Our study also favors age as an etiologic factor with 55 per cent over 50 years of age.

Sex apparently is of little significance; male predominance, however, is more frequently reported (Kellogg). Our study adds nothing of value in this respect, showing 22 females and 20 males.

Fifty-six per cent of diverticula occur in the second portion of the duodenum according to Kellogg's statistical survey. Twenty-nine (69 per cent) of our cases occupied this segment and of these 18 occupied the site of the ampulla of Vater.

flammation, suppuration and gangrene are rarely described." Agreeing fully with his conclusions we must admit the infrequency of acute diverticulitis, but we would like to emphasize the frequency of chronic inflammatory changes and suggest that many a diverticulum is not as innocuous as its discoverer may conclude.

The manifestations of acute duodenal diverticulitis are those of an acute abdomen with nausea, emesis, pain and localized tenderness with associated muscular rigidity, fever and leukocytosis. These occurring in a patient with a roentgenologically demonstrable diverticulum suggest the diagnosis, but concomitant involvement of adjacent viscera may complicate the picture.

Chronic diverticulitis is considered characterized by intermittency and simulation

CHART 2
RELATION TO OTHER ROENTGENOGRAPHICALLY
DEMONSTRABLE PATHOLOGY IN 789 G. I. SERIES

	No.	Per Cent		No.	Per Cent
Duodenal diverticula	42	5.3	Chr. ulcerative colitis	17	2.1
Esophageal diverticula	3	0.3	Hiatal hernia	17	2.1
Gastric carcinoma	4	0.5	Cardiospasm	23	2.9
Gastric diverticula	5	0.6	Cholelithiasis	39	4.9
Gastric ulcer	9	1.9	Duodenal ulcer	149	18.8

This illustrates the relative frequency of diverticulosis of the duodenum.

The supposed immunity to inflammatory change is considered due to two characteristics. (1) Comparative sterility and fluidity of their content; (2) wide mouthed ostia and inverted supported position (when on the concave side of the duodenum) rendering easy dependent drainage. This second and most important consideration seemingly lacks substantiation when one appreciates the statistics of Weintraub and Tuggle that 52 of 310 cases showed a six hour retention; this stasis should favor bacterial growth and inflammatory involvement.

Kellogg, in variation from other contributors, states "chronic inflammation is frequent." However, he adheres to "acute in-

to a duodenal ulcer syndrome. By associated pathology, ulceration, duodenitis, cholecystitis, obstruction of duodenum and common duct, and pancreatic involvement, they may display an involved syndrome. The manifestations may be as indefinite as the term "dyspepsia." We must admit the difficulty in relating symptomatology to existing pathology.

As to the diagnosis we cannot vary from Case's statement: "When a duodenal diverticulum is roentgenologically demonstrable, when retention of barium is marked, and when the pouch is tender to pressure, the diagnosis of duodenal diverticulitis is justified."

In our 42 cases, there were three instances in which diverticulitis was proved.

CASE No. 1

This patient was a 63 year old woman, six months' convalescent from cholecystectomy (acute cholecystitis with cholelithiasis) who for approximately three months had experienced intermittent epigastric pain with fever and leukocytosis. On one occasion, there was mild icterus and bile stained urine.

Examination revealed obesity, acute illness and exquisite epigastric tenderness with moderate muscular rigidity.

Roentgen study revealed: "arising from the descending duodenum in the region of the ampulla of Vater is a large diverticulum. Palpation directly over it elicits exquisite tenderness. At six hours—a large residuum outlines the diverticulum."



Fig. 1 (Case No. 1): Illustrating the single large diverticulum with long pedicle apparently angulated.

Common duct calculus was considered in the differential diagnosis.

Exploratory excluded common duct calculus. The diverticulum was found acutely inflamed with marked peridiverticulitis. An anterior gastroenterostomy with enteroenterostomy was performed. Convalescence was complicated by digestive manifestations explainable on a basis of her achlorhydria and accommodation to her gastroenterostomy. Subsequently she developed steatorrheal manifestations considered due to associated pancreatic involvement by the peridiverticulitis.

Four months postoperatively she was asymptomatic and has remained so.

CASE No. 2

This was a 63 year old woman with intermittent upper abdominal pain associated with chills, fever, nausea and emesis. Examination revealed an obese, acutely ill, febrile woman with acute upper abdominal manifestations.

Roentgen study revealed multiple duodenal diverticula. "The most proximal is at the junction of the second and third portions of the duodenum. Marked functional disturbances are seen in the duodenum. At six hours, there is barium in the traverse duodenum and two of the larger diverticula still are filled."

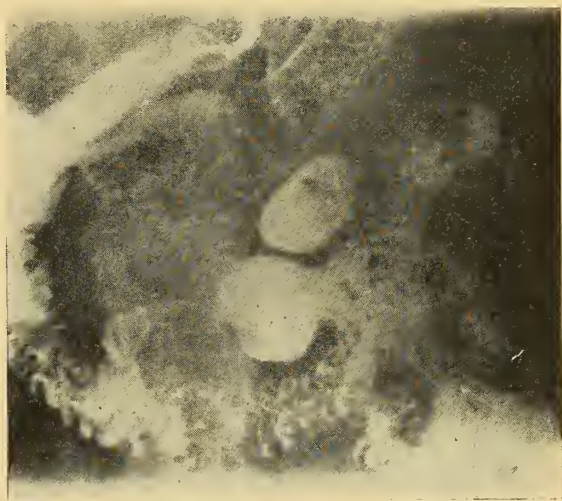


Fig. 2 (Case No. 2): Showing the large mouthed diverticula occupying the distal duodenum which should have drained readily but which did show 6 hour retention.

Under conservative measures, the acute manifestations subsided and the patient considered herself well, but a recurrence three months later indicated surgical intervention. Acute inflammatory changes were found. Because the diverticula were considered distal a duodenojejunosomy was performed. The patient did not improve; radiographically an undiscovered diverticula obstructed the anastomosis. Five months later, on reoperation, the pylorus was plicated and a gastroenterostomy was done. Autopsy revealed diverticulitis of the duodenum with acute peritonitis and also a Meckel's diverticulum and primary carcinoma of the pancreas.

CASE No. 3

A 40 year old woman complained of intermittent epigastric pain associated with nausea and hematemesis. She had been jaundiced with one seizure. Examination revealed obesity, acute epigastric tenderness and anemia.

Thorough diagnostic study revealed no abnormality other than a diverticulum in the descending

duodenum with six hour barium retention and acute localized tenderness.

Exploratory revealed no other pathology. There was considerable peridiverticulitis. The diverticula was dissected free, excised and the stump ligated, inverted and sutured.

This patient has been free of abdominal discomfort.



Fig. 3 (Case No. 3): Showing the diverticulum in the first portion of the duodenum.

Of the remaining 39 cases, demonstrable pathology other than the diverticula accounted for the symptoms of 13, leaving 26 patients with no diagnosis other than diverticulosis with possibly chronic diverticulitis. We have tabulated these manifestations for evaluation.

CHART 3
TWENTY-SIX CASES OF DIVERTICULA
WITHOUT OTHER DISEASES

	No.	%
Epigastric pain	24	90
Duodenal ulcer syndrome	16	60
Nausea	19	70
Barium retention	12	46
Localized tenderness	15	53
Pancreatic or biliary dysfunction	21	80

Eight of these cases were so definitely instances of diverticulitis that operation

was considered; in three because of electivity and their age it was considered inadvisable, three improved on an ulcer regimen and the remaining two (Vaterian type) subsequently underwent cholecystectomy for acute cholecystitis without cholelithiasis.

While it has been stated by roentgenologists Weintraub and Tuggle that it is "hazardous to assume a diverticulum is cause of abdominal symptoms" we must express ourselves as feeling otherwise. Even where it is apparent that there are no actual evidences of inflammation nor any threat by their position, we must consider Morton's suggestion "It is possible their presence may upset the smooth running of the gastrointestinal tract by disturbance in the nerve control." Certainly they are a departure from the normal and as such may account for any bizarre manifestation according to their location.

There are complications to this complication reported:

1. Perforation:—our tabulation shows seven reported instances. The clinical picture is that of an acute upper abdominal catastrophe.

2. Perdiverticulitis:—Case (1916), Maclean (1927), Lucinian (1930) and Nicholson (1935) have each given descriptive instances of upper abdominal symptoms related to duodenal diverticula adhered to adjacent tissues.

3. Duodenitis:—is recorded as a rare sequelae but should be, in our opinion, a likely accompaniment. The actual diagnostic proof is difficult clinically. Wilkie demonstrated the existence of such combined pathology.

4. Hemorrhage has been mentioned.

TREATMENT

Operation is, of course, the only corrective therapy. Asymptomatic diverticula are usually left alone, for every surgeon appreciates the possibility of fistula formation after opening the retroperitoneal duodenum. Their occurrence in a complaining patient, free of other demonstrable pathology who does not respond to medical manage-

ment similar to an ulcer regimen, are due exploration and operative management. Invagination and suture is permissible for small pouches; cyst formation and obstruction must be admitted as potential complication to such surgery. Large sacs deserve excision, careful inversion of the remnant and transverse suturing should the neck be wide. Maclean has offered transduodenal resection in ampullary instances to minimize the trauma to important structures. Rarely does the uncomplicated diverticulum indicate pylorotomy or pyloric occlusion and gastroenterostomy; however, multiplicity may indicate such or perhaps duodenojejunostomy should the diverticula occupy the distal duodenum and permit an anastomosis proximally.

CONCLUSIONS

1. The diagnosis of duodenal diverticulosis is more readily made by improved roentgen study and was found in 5.3 per cent of our cases.
2. Acute duodenal diverticulitis is rare, but possibly more frequent than supposed. Two instances in our study represents 4.7 per cent.
3. Chronic duodenal diverticulitis is a diagnosis that may be rightly made.
4. When sufficient manifestations are only explainable by a roentgenographically demonstrable diverticulum which is tender and retains barium, operative correction is certainly advisable.
5. We have not considered other serious complications to duodenal diverticula.

CHART 4
SURGICALLY MANAGED ACUTE DUODENAL DIVERTICULITIES

Case	Year	Author	Age	Sex	Site	Operation	Associated Pathology	Result
1	1917	Basch	36	F	II	Resection-gastroenterostomy	Duodenal dilatation	Cured
2	1920	Moore	58	M	II	Resection-gastroenterostomy	None	Cured
3	1923	Maclean	58	F	II	Resection-duodenotomy	Chr. pancreatitis	Cured
4	1923	Huddy	27	F	II	Resection-drainage	Perforation	Cured
5	1925	Butler & Ritvo	40	M	II	Inverted & sutured	Duodenal ulcer	Cured
6	1926	Bensaude & Vasselle	36	M	I	Gastroenterostomy	Duodenal ulcer	Cured
7	1927	Monsarrat	58	F	II	Resection-drainage	Perforation	Cured
8	1929	Erkes	53	F	I	Drainage	Perforation	Died
9	1929	McQuay	65	M	II	Gastroenterostomy	Cholelithiasis	Cured
10	1930	Lucinian	36	F	II	Resection	Perforation	Cured
11	1933	Costello	37	M	II	Inverted & sutured	Perforation	Cured
12	1938	Beaver	54	M	II	Drainage	Perforation	Died
13	1939	Boland	59	M	II	Cholecystectomy & appendectomy	Perforation	Died
Our Cases								
1	1939	Surgeon Ochsner & Maes	62	F	II-III	Duodenojejunostomy-gastroenterostomy	Perforation—duodenal obstruction—carcinoma pancreas	Died
2	1942	Maes	62	F	II	Anterior gastroenterostomy-enteroenterostomy	Pancreatitis—jaundice	Cured

In acute inflammatory states, it seems best judgment to avoid the site of pathology and plan a side-tracking operation, preferably with pyloric occlusion or even gastric resection.

We wish to accredit the excellent radiographic studies in this report to Dr. M. Teitelbaum of Touro Infirmary.

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DISCUSSION

Dr. Alton Ochsner (New Orleans): I think it is indeed gratifying for an internist to suggest surgical therapy as much as Dr. Browne has in these cases. His statistics are to me interesting. It is interesting that 5 per cent of his patients who were examined roentgenologically had duodenal diverticula, a higher incidence than that of gastric carcinoma and ulcer.

It is interesting to note that only 13 instances of operation have been reported since 1917. While that is undoubtedly true it does not give a true picture of the condition. I personally, have had seven or eight; I never have thought it worthwhile to report. I am sure that is true of other surgeons. There are not many patients operated upon, it is true, but the fact that only 13 have been reported since 1917 astounds me.

Dr. Browne brought out that in duodenal diverticulosis the treatment is one of conservatism. Only after symptoms of obstruction or diverticulitis should the patient be operated upon. In my experience, retention usually occurs in the first and second portions.

In contrast to diverticula of the colon where infection is the rule, infection is the exception here. As Dr. Browne brought out, if the patient does have symptoms one should not delay too long surgical therapy.

Dr. McHardy (In closing): I wish to emphasize the fact that these 13 cases, surgically managed, reported in the literature, are instances of acute duodenal diverticulitis; we were not covering surgery of diverticula in general in this survey. Morton in his review and Kellogg in his thoroughness also reveal this rarity.

Further it seems apparent the surgeons disregard the entity for in the most recent report of an instance the operator on an acute abdomen did a cholecystectomy and appendectomy in an instance where autopsy revealed a perforated duodenal diverticulitis.

We are emphasizing the existence of an entity which is not as rare as supposed.

BAGASSE DISEASE OF THE LUNG

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and

ROSCOE L. PULLEN, M. D.†

NEW ORLEANS

The report of Jamison and Hopkins¹ in 1941, of pulmonary disease presumably resulting from inhalation of bagasse dust, has led recently^{2, 3} to further recognition of the disease and the development of several theories of the cause. Jamison and Hopkins reported the isolation of a fungus from the sputum of their patient and suggested that this organism was the etiologic factor. Castleden and Hamilton-Paterson could not confirm the fungus theory but put forward

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evidence to support an allergic origin. The following case is reported because investigation resulted in the observation, for the first time as far as we can determine, of the pathologic picture in the pulmonary tissue.

CASE REPORT

R. A., a white male, aged 26, entered the Tulane Unit of Charity Hospital on February 23, 1943, complaining of shortness of breath and cough. He stated that he was well until a month previously when he noted marked dyspnea on exertion. Cough developed and produced a small amount of mucoid sputum. There was no hemoptysis. With the cough, night sweats appeared but the patient did not take his temperature. There was a weight loss of 17 pounds in the first three weeks. The patient had worked in bagasse dust for 20 weeks before the development of symptoms.

Past history revealed little of importance. The usual childhood diseases were recorded. There was no history of pulmonary tuberculosis or of the symptoms related to it, nor of typhoid or rheumatic fever. The patient had never been operated upon. The system history was not contributory, nor was the family history.

Physical examination disclosed a thin white male of 26, sitting in bed, with obvious dyspnea. The respiratory rate was 35 per minute, pulse rate 115 per minute, temperature 100°F. Blood pressure was 132/80. He coughed occasionally, raising small amounts of mucoid sputum. Oral hygiene was poor; there were many carious teeth. The only findings of importance were in the lungs. The chest was symmetrical and expansion equal. Impaired resonance and breath sounds were present in the right base except in one area at the posterior axillary line where minimal signs of consolidation were elicited. Fine rales were present in both bases posteriorly. The remainder of the examination was essentially negative.

Blood examination showed hemoglobin of 15.8 gm., erythrocytes 4.9 million, leukocytes 13,500, with 60 per cent polymorphonuclear leukocytes, and no eosinophiles. The Wassermann and Kline reactions were negative. Blood urea was 15.4 mg. per hundred cubic centimeters. Five sputum examinations were negative for acid-fast bacilli. No fungi were found. Urine was negative. A Mantoux test (1:10,000 O. T.) was negative. Chest x-ray showed a miliary ground glass mottling throughout both lung fields, radiating from the hilar regions. The apices were clear (fig. 1). Lung biopsy was obtained with a 12-gauge needle in the sixth week of the disease. A reproduction of the section from the biopsy is shown in figure 2. The section was reviewed by Dr. B. Pearson of the Tulane University Department of Pathology. Through his kindness we give the following report: "The biopsy, taken during the sixth week of the

disease, reveals pulmonary tissue in which there are embedded several 'spicules' of an irregular foreign material. This is similar to bagasse material when placed under the microscope. Under the

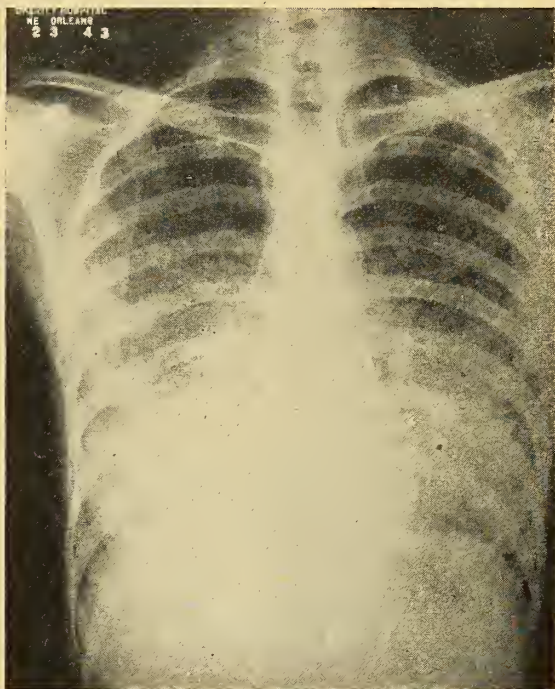


Fig. 1: Roentgenogram of chest taken on admission, showing the miliary ground glass mottling throughout both lungs, radiating from the hilar regions. Apices are clear.

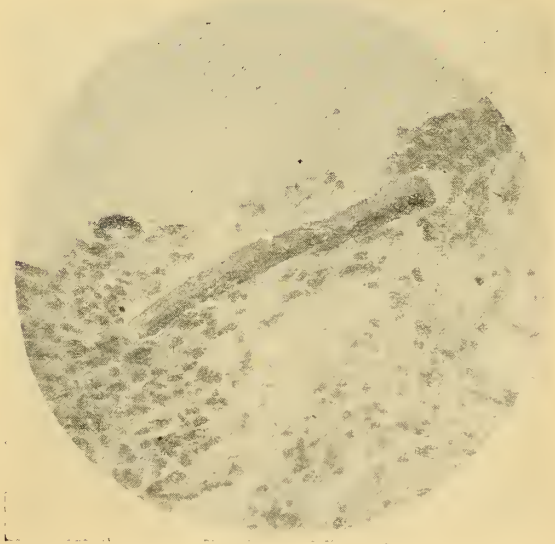


Fig. 2: Reproduction of a section of the lung obtained by needle biopsy, showing a large piece of foreign material having the characteristics of bagasse under the polarizing microscope. A number of small scattered spicules were also seen.

polarizing microscope these 'spicules' are seen to rotate polarized light. Many smaller scattered pieces, with an average size of $2 \times 8 \mu$ are also found. These latter structures are seen especially where there is a fibroblastic reaction of the interstitial tissue of the lung."

The patient's temperature varied from 100.4° to 98° F. An x-ray of the chest showed some clearing of the infiltration. The patient gradually improved and, on the twenty-third day, was discharged to the out-patient clinic for ambulatory care, a chest x-ray taken on March 5, 1943, showing considerable clearing of the process.

DISCUSSION

The clinical picture shown by this patient is similar to that found in Jamison and Hopkins' patient. We have collected our cases of bagasse disease and analyzed the clinical picture to establish its basic features. This report, which includes a discussion of the etiologic considerations, will appear elsewhere.⁴ Our interest in the present case centers upon the demonstration, for the first time to our knowledge, of the pathologic changes in the lungs. Particles of bagasse are seen and were confirmed by the polarizing microscope. The progress of the reaction and the occurrence of a consistent picture is not yet demon-

strated. Through the kindness of Dr. J. Schenken of the Department of Pathology of the Louisiana State University Medical School we are permitted to report the microscopic findings in the lung of an autopsied case of bagasse disease. The section is reproduced in figure 3. Dr. Pearson described the section as follows: "In a section of a lung obtained from a patient dying of bagasse disease, an increase in the fibroblast reaction of the interstitial tissue is shown. Small needle-like spicules can be seen occasionally in these areas when subjected to polarized light, but are not as numerous as in the biopsy. However, the alveolar cells are now very large and the cytoplasm is foamy. Aside from being larger, they are much more numerous than the previous section and in some areas fill the alveolar spaces." In this section the process appears to be more advanced than in the biopsy of our reported case. Bagasse dust is in less evidence in the lung tissue but is definitely shown by the polarizing microscope. However, fundamentally the same type of reaction is seen.

It is evident that particles of bagasse may enter the alveolar regions and produce the reaction described above. The picture appears, therefore, to be an organic pneumoconiosis, but the mechanism of the changes, and the nature of the stimulus set up by the bagasse dust to produce the cellular reaction, remain obscure.

SUMMARY

A case of bagasse disease of the lung is reported together with the findings at biopsy in an involved area of the lung. These findings are compared with those in the lungs of a fatal case. The picture appears to be that of an organic pneumoconiosis.

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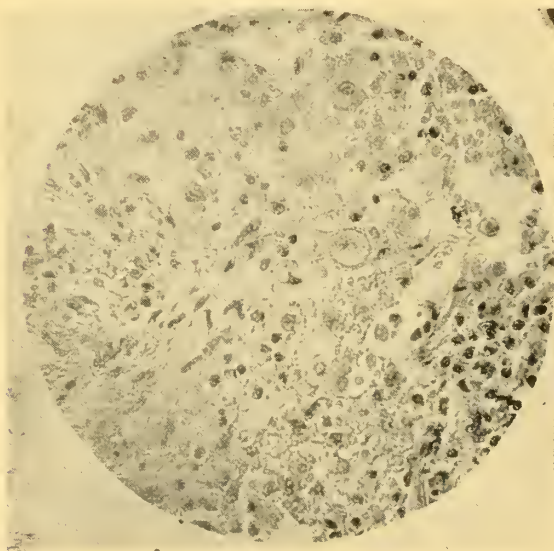


Fig. 3: Reproduction of a section of the lung obtained at autopsy from a patient who died from bagasse disease. The alveolar cells are very large and the cytoplasm has a foamy appearance. (See text.)

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GET A MEMBER

This editorial is directed primarily to the members of the Louisiana State Medical Society directly; they realize and appreciate the value of organization; they know that the medical profession must stand together if it is to combat the drives that are made by certain individuals to bring about the introduction of state medicine. It is addressed to the members of the State Society indirectly in that it is through them that the doctors who do not belong to the State

Society can be brought into the organization. The physicians of the State Society should see to it that every doctor in their neighborhood becomes a member of the State Society if he is not already a member of the organization. The medical men who do not belong to organized medicine at the present time are slackers, and it should be pointed out to them that it is unfair for a limited number of medical men to maintain and to be responsible for medical practice in this state and in this country. This is a selfish attitude, because they are depending on others to uphold and to sustain medical practice as it is now conducted.

If it might not be wise to tell the non-members of the organization that they are not doing their duty, it might be more tactful to point out to them why a man should be a member of the Louisiana State Medical Society. Some of these reasons are obvious. The annual meeting and the journal afford an opportunity of hearing and reading scientific and up-to-date medical papers. The annual meeting is conducted with friendship and good will on the part of everyone. It is good to get together with your medical confreres. The State Society is instrumental in keeping out practitioners of various cults and isms from the state. This is not only beneficial to the profession but also it is of decided advantage to the ignorant and to the unintelligent who might call upon these people were they practicing in the state, and to their sorrow.

Membership in the Society gives to the member protection from malpractice suits. To each member of the Society goes the official medical journal. The State Society is instrumental in obtaining a low rate premium for group indemnity and for group life insurance. If the doctor should become crippled or should he have misfortune in the later years of his life, an indigent fund is provided to help him out in his difficulties. Membership in this organization is a prerequisite to belonging to the American Medical Association and the Southern Medical Association. The Secretary-Treasurer of the State Society is at call of the mem-

bers of the organization, and through him they may be informed as to what is going on in the state, whether it be a question of locating a suitable place or whether it has to do with the motions that are introduced in the state legislature which have to do with medical practice and medical affairs.

Membership in the Society is of economic value to its members; it is of scientific value and it is of social value. No man who is practicing medicine in the State of Louisiana can afford to be a non-member of the organization. He is making others responsible for the advantages that he obtains as a member of the profession. You members of the State Medical Society tell these facts to the doctor who does not belong of the value of organized medicine. Get him to join up.

MEDICAL SERVICE PLANNING

One of the many problems which is causing fear and worry to the average physician is that one which has to do with the so-called socialized medicine. The medical man can not help but feel with the depression that is bound to occur after this war that there will be a sustained effort to regiment the medical profession under the guise of economic necessity. Medical men as a group talk much and write a little about the evils of governmental control of their profession, but on the whole they do not do a whole lot about it. It is obvious that we are living in a period of changing times, and that the best way to circumvent the social theorists is to have a definite plan and scheme for medical service which the doctors can introduce, control, and which will prove reasonably effective.

Already some 20 state medical societies have considered seriously medical service plans to introduce in one or another of their respective states. Some states have already developed, through their state medical societies, prepaid medical service plans which are reasonably satisfactory and which are indices of the trend towards accomplishing something which will be definitely concrete.

In California they have the California Physicians Service; in New Jersey the Medical-Surgical Plan. In Michigan, Pennsylvania, Colorado, North Carolina, and Massachusetts, as well as a few other states, medical service plans have reached the stage of accomplishment. As these plans vary considerably they will afford an opportunity for future study to determine which is the best and which is the most satisfactory of them all.

Already much valuable information of the state medical society service plans has been obtained. There has been shown that it is extremely difficult to put on an actuarial basis the need for medical service. People are likely to take advantage of the prepayment for medical service opportunities and demand more of the doctor than he should be required to give. There has not been any great enthusiasm on the part of the public as a whole to enter in the service schemes. Many doctors feel that unnecessary surgical procedures may be carried out under duress and the pleading of patients, as they can obtain surgical relief without cost to themselves and they believe that surgical intervention should be tried, although the doctor may not be thoroughly convinced in his own mind that an operation will cure the underlying condition. One of the difficulties in selling any such scheme is to place an income level above which it is inadvisable to offer to the well to do patients medical insurance. It is quite generally held that plans should be provided only for those in the lower income group, and the consensus is that it should not be placed higher than an income of from \$2,000 to \$3,000 for a family.

The House of Delegates to the American Medical Association has definitely gone on record to the effect that medical service should be under the control of the medical profession. We do not think any physician can disagree with this tenet of the American Medical Association. If medical service plans are to be perfected, the medical profession must have the guidance of these new methods of medical practice.

SUBCUTANEOUS USE OF SODIUM SULFATHIAZOLE

One of the difficulties the practitioner of medicine has had with the use of the sulfa compounds is that apparently they can be administered only by mouth or injection into a vein. The oral administration of the sulfonamides in most instances is thoroughly satisfactory. Occasionally, however, there is a patient to whom, because of severe delirium or coma, nothing can be given by mouth. Occasionally the patient is non-cooperative and will refuse to take the medicine, and once in a while the effect of the drug is to produce vomiting. In these instances it has been customary to give the sulfa drug in the form of a sodium salt into the vein, but this method is not entirely satisfactory by any means. A peak concentration is soon reached and then falls rapidly. The objective to be reached in the use of the sulfa drugs is to obtain the proper therapeutic blood level and then to hold this level at a certain fixed figure. This can not be done when the drugs are given intravenously.

Because of the several difficulties enumerated in regard to the two standard methods of giving the sulfonamides, the physician should be pleased to know that experimentally and clinically it has been shown that sodium sulfathiazole may be given safely subcutaneously. Lyons, Climenko, and Gorham* reported upon a series of 200 patients to whom they gave sodium sulfathiazole by the subcutaneous route. They preceded the clinical use of the drug with a study in experimental animals of the local reactions that have been the barrier to the use of the sulfa preparations intra-

muscularly or subcutaneously. They demonstrated in a series of rats that the local reaction was minimal or harmless up to as high as a 10 per cent aqueous solution of the anhydrous sodium sulfathiazole. They, therefore, concluded that it would be possible to give the sulfathiazole to patients subcutaneously. So far they have given it in over 200 instances in various diseases, and in age groups extending from three weeks to 82 years of age. They recommend the administration of a 0.5 per cent aqueous solution of sodium sulfathiazole in quantities as high as 2,000 cc. and giving it at the rate of approximately 100 cc. per hour. There were no serious reactions in any of their patients, and only in eight was it necessary to use a hot water bottle because of slight swelling and tenderness locally. The authors state that blood concentrations were somewhat lower than if the drug had been given orally. However, it should be pointed out that the blood concentration level is by no means a satisfactory index as to the efficacy of the treatment. Sulfadiazine may have low levels in the spinal fluid, although the levels are higher than that of sulfathiazole, but nevertheless the patient with meningitis will get well when these sulfonamide preparations are given orally or intravenously.

Unfavorable side effects were not often observed when the drug was given under the skin. There were two instances of anuria and four of gross hematuria, and 30 patients showed occult hematuria. Three patients had a mild secondary anemia.

Lyons and his co-workers have shown that the sulfonamides may be given under the skin. This method of administration may be beneficial in more ways than one, because the hypodermoclysis which is given concomitantly may provide sufficient fluid to eliminate the kidney complications of sulfathiazole and sulfadiazine administration.

*Lyons, J. A. A., Climenko, D. R., and Gorham, L. W.: The subcutaneous administration of sodium sulfathiazole in various clinical conditions, *Am. J. Med. Sci.*, 205: 703, 1943.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

AMERICAN FEDERATION FOR CLINICAL RESEARCH, NEW ORLEANS SECTION

The following abstracts are of papers presented at the meeting of the Federation held at the Hutchinson Memorial, Tulane Medical School, April 7, 1943.

The Electrocardiographic Ischemia-injury Pattern Produced in Dog by Temporary Occlusion of a Coronary Artery. (Robert H. Bayley, M. D., John S. LaDue, M. D., and Dorothy J. York, B. S.—From the Department of Medicine of the School of Medicine of the Louisiana State Medical University, New Orleans and from the Heart Station of the Charity Hospital of Louisiana at New Orleans.)

When a segment of the anterior descending branch of the dog's left coronary artery is dissected through a small hole in the pericardial sac and a ligature passed around the artery, the vessel may be briefly occluded totally or subtotally as desired by tension on the ligature, and accordingly, the muscle ordinarily irrigated by its terminals undergoes the development and recovery of various grades of local ventricular ischemia and injury. The associated electrocardiographic changes are the object of the present study. The periods of occlusion produced have not usually exceeded 90 seconds, or about one-twelfth of the time required to produce minimal myocardial changes. In several minutes after cessation of occlusion, the altered physiological state of the involved myocardium returns to normal as evidenced by its produced electrical effects. It is clear, therefore, that while myocardial infarction is not produced, the order of development of the physiological changes up to the point at which occlusion terminates is the same as would occur if infarction were produced by more prolonged occlusion.

Records of the produced electrical effects are made with a galvanometer of the Einthoven type of recording continuously before, during, and after occlusion. The lead employed is of the essentially unipolar variety in which the exploring electrode is contacted with the pericardial sac superjacent to the terminals of the dissected artery and the indifferent electrode is contacted with the left foreleg.

The electrocardiographic patterns obtained displayed two kinds of changes. Primary T-wave changes ascribed to local ventricular ischemia are the first to appear and the last to disappear. The ischemia phase of the ischemia-injury pattern is ordinarily transgressed in 30 seconds after sudden complete occlusion. Oppositely directed displacements of the diastolic base-line and the RS-T junctions are the second kind of change to appear and the first to disappear, and are ascribed to the flow during diastole of a current injury which tempo-

rarily reverses its direction of flow during systole. The recordings are referred to as ischemia-injury patterns. They show, contrary to general opinion, that the initial electrocardiographic changes associated with myocardial infarction are primary T-wave changes ascribed to local ventricular ischemia. They demonstrate much more rapidly the same kind of electrocardiographic changes which are temporarily associated with myocardial infarction and thereby demonstrate that these kinds of changes are not necessarily diagnostic of myocardial infarction. In contrast to the ischemia-injury effects are certain well recognized permanent QRS changes associated with myocardial infarction which are diagnostic of infarction but which are not observed in the ischemia-injury pattern.

In Vitro Studies of Oxidizing Agents on Clostridium Welchii; Preliminary Report. (Maxwell F. Kepl, M. D., Guy Caldwell, M. D., and Alton Ochsner, M. D.—From the Department of Surgery, Tulane University, School of Medicine, New Orleans.)

This study was undertaken in order to determine whether or not some of the better known oxidizing agents, such as potassium permanganate, calcium permanganate, potassium persulfate, calcium peroxide, zinc peroxide, sodium nitrate, potassium dichromate, sulfanilamide powder, sodium dichromate, sodium perborate, and sodium thiosulfate, would have any effect in vitro on *Cl. welchii* meat broth cultures suspended in a human plasma medium. The conditions were similar to those found in contaminated wounds. Solutions of magnesium sulfate were used as controls. Various dilutions of these substances, ranging from 1-10 to 5-5120, were made under sterile conditions so that the volume was always 1.0 cc. To this was added immediately 1 cc. of human plasma containing 0.1 cc. of a 24 hour meat broth culture of actively growing *Cl. welchii* bacteria which had a calculated number of 163×10^9 bacteria per cc. by the use of a standard bacterial counting chamber.

The contents of the tubes are well mixed and allowed to stand at room temperature of one hour, at the end of which time the entire contents of each tube were placed in a tube of sterile milk, well mixed, and incubated for 24 hours. They were observed at 8, 16, and 24 hour intervals for beginning stormy fermentation. Control tubes without inoculation showed no change after such periods of incubation, while tubes inoculated with pure cultures of *B. welchii* showed beginning fermentation as early as 7 hours after inoculation with 0.1 cc. of *B. welchii*.

Under the conditions of this experiment, it was noted that sodium perborate, potassium perman-

ganate and potassium dichromate were the best inhibitors of bacterial growth at the end of 8 hours incubation. Calcium permanganate and calcium peroxide gave inhibition in the highest dilution (1 to 40) at the end of 24 hours, with potassium dichromate and zinc peroxide next. Sulfanilamide showed no bacteriostatic activity at the end of 24 hours. It was noted that there was present a definite delay in fermentation in those tubes that had the higher dilutions of most of the oxidizing agents in the first 8 hours of observations, even though at the end of 24 hours the fermentation in these tubes would be called positive.

Early Immunization Against Pertussis. (Wallace Sako, M. D.—From the Department of Pediatrics, Louisiana State University School of Medicine and the Charity Hospital of New Orleans.)

The earliest age at which active immunity against pertussis can be produced is unknown. A study was therefore conducted to determine the effect of early immunization against pertussis (A) on the agglutination titer and (B) on the incidence of the disease in those children who have been immunized and have been intimately exposed to the disease within the family.

MATERIAL AND METHODS

A. Agglutination titer. Three hundred young infants were vaccinated with Lilly's alum precipitated pertussis vaccine (40 billion per cc.) according to the following schedule:

Age	Dose
1-2 months	0.2 cc
2-3 months	0.3 cc
3-4 months	0.5 cc

All injections were given deep subcutaneously following the recommendation of Bell. Rapid agglutination tests were conducted according to the instructions supplied me by the Eli Lilly and Company.

B. Incidence of pertussis. Nine hundred and twenty-eight cases were immunized according to the above schedule. Nine hundred other infants of

similar age were not immunized and these served as controls. Both the early immunized group and the control group were followed for a period of one year.

RESULTS

A. The agglutination titers obtained are summarized in Table 1.

A glance at the above table shows that three to four months after immunization over 60 per cent of 300 young infants develop agglutinins in the blood.

B. Incidence of pertussis following intimate familial exposures.

1. Test group. Of the 928 young infants immunized in the first half year of life, 63 were intimately exposed to cases of pertussis in the family. There were 97 cases of pertussis in the 63 families where pertussis occurred. Twelve of the sixty-three exposed immunized young infants contracted mild pertussis without complications or deaths. Of the twelve infants contracting pertussis, none had a strong agglutination titer, four had weak agglutination titers, and eight had negative titers.

2. Control group. Of the 900 infants who were not immunized 42 were intimately exposed to other cases of pertussis in the family. There were 57 cases of pertussis in the 42 families where pertussis occurred. Thirty-three of the 44 exposed infants contracted pertussis with three deaths, eleven pneumonias successfully treated, and nineteen average cases.

SUMMARY

1. Over sixty per cent of 300 young infants immunized against pertussis in the first half year of life showed agglutinins in the blood.

2. Of 928 infants immunized against pertussis in the first half year of life, twelve developed mild pertussis with no complications or deaths. Of the 900 non-immunized infants who served as control, 33 contracted severe pertussis with three deaths and eleven pneumonias.

TABLE 1

PERTUSSIS AGGLUTINATION TITERS IN 300 YOUNG INFANTS IMMUNIZED WITH ALUM PRECIPITATED TOXOID FORTY BILLION PER CC. (LILLY).

	After second injection but before third injection	Interval after completion of immunization				
		1 mo.	2 mos.	3 mos.	4 mos.	6 mos.
Weakly positive	91	96	116	123	132	120
Strongly positive	7	22	52	65	61	59
Total positive	98	118	168	188	193	179
	(32.7%)	(39.3%)	(56%)	(62.7%)	(64.3%)	(59.7%)

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

- June 1. Eye, Ear, Nose and Throat Staff, 8 p. m.
 June 2. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
 Mercy Hospital Staff, 8 p. m.
 June 3. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
 Executive Committee, Baptist Hospital, 8 p. m.
 June 7. Board of Directors, Orleans Parish Medical Society, 8 p. m.
 June 9. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
 Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
 Touro Infirmary Staff, 8 p. m.
 June 14. Scientific Meeting, Orleans Parish Medical Society, 8 p. m.
 June 15. Charity Hospital Medical Staff, 8 p. m.
 June 16. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
 Charity Hospital Surgical Staff, 8 p. m.
 Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.
 June 17. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
 June 18. I. C. R. R. Hospital Staff, 12:30 p. m.
 June 21. Hotel Dieu Staff, 8 p. m.
 June 22. Baptist Hospital Staff, 8 p. m.
 June 23. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
 French Hospital Staff, 8 p. m.
 Hutchinson Memorial Clinic Staff, 8 p. m.
 Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
 New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.
 June 24. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
 June 25. L. S. U. Faculty Club, 8 p. m.
 June 30. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.

During the month of May the Society held one regular scientific meeting and one joint meeting with the New Orleans Gynecological and Obstetrical Society. The program of the regular meeting, which was held Monday, May 10, was as follows:

Some Unusual Infections of the Newborn—Report of Cases, by Dr. Ruth G. Aleman.

Indications for Vitamin Therapy, by Dr. Grace A. Goldsmith.

Drs. Rena Crawford and Suzanne Schaefer opened the discussions on Dr. Aleman's paper, and

Drs. Lucy Scott Hill and Marie Stanbery opened the discussions on Dr. Goldsmith's paper.

The program of the joint meeting, which was held Monday, May 24, was as follows:

Tuberculosis and Pregnancy, by Dr. Edgar Hull (by invitation).

The Diagnostic Confusion between Acute Appendicitis and Certain Gynecologic States, by Dr. Frederick F. Boyce (by invitation).

Diphtheria of the Cervix Uteri, by Dr. Woodard D. Beacham.

At the recent annual meeting of the Louisiana Tuberculosis Association Dr. Sydney Jacobs led the symposium on tuberculosis control among special groups in which participants and their subjects were as follows: Dr. Chester A. Stewart, college students; Dr. S. S. Pinto, industrial workers; and Dr. W. D. Beacham, women. Methods in community tuberculosis problems were discussed by the following: Dr. Edgar Hull, tuberculin testing; and Dr. R. Alec Brown, survey x-ray methods. Drs. Julius Lane Wilson and B. I. Burns presided.

Dr. H. W. Kostmayer was recently elected to Omicron Delta Kappa, national honorary leadership fraternity.

At the recent regional meeting of the American College of Physicians the following took part in the program: Drs. Joseph S. D'Antoni, Thomas P. Findley, George W. McCoy, George R. Meneely, John H. Musser and John R. Schenken.

Dr. John H. Musser presented papers on the War and Medical Education, and the Doctor's Heart at the meeting of the Arkansas State Medical Society in Little Rock, April 19-20.

Dr. M. Carl Wilensky was recently elected president of the staff of the Eye, Ear, Nose and Throat hospital. Dr. C. S. Wood was named secretary.

RESOLUTIONS ADOPTED BY THE ORLEANS PARISH MEDICAL SOCIETY DR. GEORGE STEWART BROWN

The Orleans Parish Medical Society records with sadness the loss of our noble and esteemed comrade, Doctor George Stewart Brown. To have been an active member of the New Orleans medical profession for forty years and the dean of the New Orleans Pharmacists for fifty-five years, measured in terms of service would fill the cup of more than one full, long and busy life.

Records only bespeak a small part of his activities. His life was a wealth of untiring, constant, devoted service—service to his fellowmen, service as a teacher and service to his God.

Service to his fellowmen can best be recorded in his fight against tuberculosis, founding with

others the anti-tuberculosis society thirty years ago. Service as a teacher is recorded in his long professorship at Tulane University. Service to his God is recorded in the long life as an aggressive churchman, always in the front line of the Battle for Christ. Service such as that of Doctor George Stewart Brown is "the price we pay in this world for the place we have in the next."

In the loss of Doctor George Stewart Brown our profession has lost an exemplary doctor, a beloved teacher, a fearless Christian leader, one who was an inspiration to all who knew him. We have sustained a great loss.

DR. J. HOLMES SMITH

The Orleans Parish Medical Society records with sorrow the loss of our esteemed colleague and friend. Untimely was death in abruptly closing the span of his life. However, he will live long in

the memory and hearts of those he has left behind. His gentle manner, his quiet voice, his genuine humility and real scientific pronouncements will keep him living until those who knew him have long since passed away.

Dr. Smith was a scholar and teacher of the first rank, although at times his beautiful simplicity and admirable humility almost obscured it.

We record the many citations of merit he received when he came to fight the bubonic plague twenty-two years ago. We record his kindness of heart, delicacy of feeling and thoughtfulness for others. We record the steadfastness of purpose and unconquerable determination to solve the many riddles that cross the daily path of the true physician. Nothing could interrupt or retard his efforts when duty called.

We know that only the Christian God Whom he served so well can comfort us in this hour of sadness.

LOUISIANA STATE MEDICAL SOCIETY NEWS

C A L E N D A R

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

REPORT OF THE HOUSE OF DELEGATES TO THE GENERAL ASSEMBLY OF THE LOUISIANA STATE MEDICAL SOCIETY—1943

Two meetings of the House of Delegates were held on May third in Baton Rouge, Louisiana.

There were 58 delegates, 9 past presidents (4 of whom served as delegates), and 15 officers present.

Minutes of the 1942 meeting of the House of Delegates and of meetings of the Executive Committee held since the 1942 meeting were adopted as published in the report sent to all members of the House.

Recommendations Contained in Reports

President—1. Continuation of Liaison Committee composed of the president, secretary and one member, the purpose of which is to coordinate public health activities and the work of the State and City Boards of Health in cooperation with the State Medical Society. — This recommendation was amended to include that Dr. David E. Brown, Director of the State Department of Health be thanked for his willingness to cooperate. — Approved. 2. That every physician should contribute

annually to the support of his profession the sum of one hundred dollars; \$25.00 to his local society, \$25.00 to the national society, and \$50.00 to his state society. — Motion was made and carried that discussion be confined to dues for membership in the State Society. — Motion was made and carried that the dues be increased to \$25.00 a year. 3. That action taken by the president in regard to unalterable objection to utilization of beds and other facilities of the Charity Hospital at New Orleans for private pay patients, be approved. — Amended to include other state hospitals. — Approved. 4. That the House of Delegates affirm the president's comments regarding the proposed federal plan for the care of wives and children of certain service men. — Disapproved. Motion was made and carried that the president appoint a committee from the Executive Committee to work out a plan agreeable to the profession and further authorize the Executive Committee to put that plan into effect.

Committee on Cancer—1. To reaffirm the activities of the Cancer Committee. — Approved. 2. That the Secretary-Treasurer write letters of appreciation to the editors of the New Orleans, Ba-

ton Rouge, Lake Charles, Monroe, Alexandria and Shreveport newspapers for articles published on cancer; also to the managers of broadcasting stations in these centers for the generous allocation of time to members of the profession and Field Army officers.—Approved. 3. That a letter of thanks be sent to Dr. David E. Brown, Director of the Louisiana State Department of Health for the donation of space in the New Orleans Medical and Surgical Journal for the publication of monthly articles on the subject of cancer.—Approved. 4. That a letter be sent to the Louisiana Division of the Women's Field Army commending them for having worked so courageously, persistently and intelligently in our war on cancer.—Approved.

Committee on Expert Testimony—1. That a Committee on Medical Testimony be made a standing committee of the Society, consisting of five members with overlapping terms.—Approved.

Committee on Hospitals—1. Chronic surgical and medical cases should not be kept in private hospitals over long periods of time as this definitely diminishes the turnover in the institution.—Approved. 2. Boarders, that is, members of family who wish to remain with patients, should definitely not be allowed to occupy beds in the hospitals.—Approved. 3. If the profession would insist on early transfer of post-operative cases to their homes by ambulance, we would materially increase the elasticity of our bed capacity.—Approved. 4. We should discourage private institutions from utilizing their beds at the present time for charity cases, as these might well be taken care of in the state institutions.—Approved. 5. Should the vacant beds at Charity Hospital be made available for the handling of private civilian practice, the administration as suggested by Dr. Daly, should be under an entirely separate management from the Department of Institutions.—Deleted from report. 6. That some effort be made to alleviate the present situation resulting in a shortage of nurses by obtaining the restoration of the two shifts, that is, a twelve hour duty, rather than the present three shifts of eight hour duty for private nurses.—Approved. 7. The utilization of practical nurses in hospitals during the war emergency, under proper supervision; also utilization of the nurses' aides who have been trained by the Red Cross.—Use of practical nurses disapproved; use of nurses' aides approved. 8. As far as possible the institutions in which interns begin their service should try to provide places among their resident staff for their former interns.—Approved. 9. That as far as possible the Louisiana State Medical Society encourage the hospitals throughout the State of Louisiana to adopt a uniform nomenclature; by doing so statistical compilation could be more easily obtained.—Approved. 10. That the records of all hospitals within the state be kept up to the standard as recommended by the American College of Surgeons and the American Medical Association.

tion.—Approved. 11. That hospitals see to it that all ambulances, serving their institutions be equipped in accordance with the recent state law.—Deleted from report. 12. That all hospitals be properly equipped for the emergency care of the injured; that each hospital have equipment for fracture care and each institution be requested to meet the requirement of the Fracture Committee of the American College of Surgeons, with reference to splints and traction and the like.—Deleted from report. Motion was made and carried that the hospitals throughout the state be notified of the recommendations adopted; also that other groups be notified of approval of recommendations which will affect them.

Louisiana State Board of Medical Examiners—1. That the House of Delegates endorse the stand that the State Board of Medical Examiners has taken against issuance of temporary licenses without examination or other requirements.—Approved.

The following reports, which contained no recommendations, were accepted: Committee on Secretary-Treasurer's Report; Council; Councilors of First, Second, Third, Fourth, Fifth, Sixth, Seventh and Eighth Districts; Committees on Care of the Indigent Physician, Journal, Maternal Welfare, Medical Defense, Mental Health, Nutrition, Public Policy and Legislation, Resolutions, Walter Reed Memorial, To Prepare History of L. S. M. S., To Study Rearrangement of Annual Meeting Programs.

Communications:

A letter received from Dr. C. C. deGravelles, President-elect, expressing regret in regard to his inability to be present due to illness, was read and motion was made and carried that a committee be appointed to send an appropriate telegram to Dr. deGravelles.

A communication from the Orleans Parish Medical Society concerning endorsement of a National Conference on Medical Service was considered and motion was made and carried that a copy of the complete file be sent to members of a special committee to be appointed to study this subject, to each member of the Executive Committee, and to the Louisiana delegates to the A. M. A.

A communication received from Dr. J. E. Lawton, of Baton Rouge, concerning his rejection of membership by the East Baton Rouge Parish Medical Society, was read and motion was made and carried that this communication be referred to the Council.

A communication received from the Orleans Parish Medical Society in re deletion of dues for members in the armed service was presented and motion was made and carried that the communication be accepted and that the resolution contained therein be adopted.

Amendments:

Motion was made and carried that *Section 2 of Article VIII* of the *Constitution* be amended to

state that "the Secretary-Treasurer shall be elected for a term of not more than five years."

Motion was made and carried that *Section 6 of Article IV* of the *Constitution* be amended to state that members may obtain inactive membership "upon recommendation of the Executive Committee."

In accordance with action taken in re recommendation contained in the president's report, *Section 1 of Chapter IX* of the *By-Laws* was amended to state "Each member shall pay into the Society an annual assessment of twenty-five dollars (\$25.00)."

In accordance with action taken in re recommendation of the Committee on Expert Testimony, amended to include a "Committee on Medical Testimony" as a standing committee of the Society.

Special Order:

Motion was made and carried that a telegram be sent to Lt. Governor Mouton expressing gratitude for his interest in organized medicine in Louisiana.

Motion was made and carried that the following resolution be adopted: Whereas the House of Delegates of the Louisiana State Medical Society has adopted favorably a recommendation that the members of the Louisiana State Medical Society have a copy of the boy and girl scouts' manual in their waiting rooms, be it resolved that the House of Delegates of the Louisiana State Medical Society respectfully have the Louisiana delegates request the house of Delegates of the American Medical Association to adopt a similar resolution in regard to members of the A. M. A.

The question of having corresponding library available to the members of the Society who live outside of the City of New Orleans was discussed. It was stated that such a plan is in effect at present. Motion was made that if such a service is in effect a committee be appointed to investigate the subject further and notify the doctors of the state that such a service is at their disposal.

The suggestion was offered that the name of the New Orleans Medical and Surgical Journal be changed to the Louisiana State Medical Journal, however this suggestion was not approved.

Motion was made that this House of Delegates go on record asking the state legislature to pass a law requiring a Wassermann test on both parties anticipating matrimony. After discussion motion was made and carried that this matter be referred to the Legislative Committee.

Dr. C. Grenes Cole offered his resignation as Councilor of the Second District, which was accepted.

Dr. M. D. Hargrove offered his resignation as Councilor of the Fourth District, which was accepted.

Motion was made and carried that the Fourth District be permitted to recommend to the next meeting of the Executive Committee Councilor for the Fourth District to replace Dr. Hargrove.

Election of Officers:

Dr. Val Fuchs, President-elect; Dr. M. D. Hargrove, First Vice-President; Dr. George Hauser, Second Vice-President; Dr. Kernan Irwin, Third Vice-President; Dr. John T. O'Ferrall, Councilor Second District; Dr. Guy Jones, Councilor Third District; Dr. Rhett McMahon, Councilor, Sixth District; Dr. C. A. Martin, Councilor Seventh District; Dr. W. F. Couvillion, Councilor Eighth District; Dr. A. W. Martin, Chairman of House of Delegates; Dr. A. V. Friedrichs, Vice-Chairman of House of Delegates; Dr. J. Q. Graves, Delegate to A. M. A. 1944 and 1945; Dr. E. H. Lawson, Alternate Delegate to A. M. A. 1944 and 1945.

Committees:

Scientific Work—Dr. P. T. Talbot, Chairman, Dr. Edgar Hull and Dr. R. T. Lucas.

Public Policy and Legislation—Dr. Rhett McMahon, Chairman, Dr. Emmett L. Irwin, Dr. E. L. Leckert, Dr. C. C. deGravelles and Dr. P. T. Talbot.

Journal—Dr. Leon J. Menville (3 year term) and Dr. G. C. Anderson (3 year term).

Medical Defense—Dr. S. Chaille Jamison (3 year term).

1944 Meeting:

Invitation extended by the Orleans Parish Medical Society to hold the 1944 meeting in New Orleans was accepted.

At the general meeting, immediately following the meeting of the House of Delegates, motion was made and carried that if the war is still going on next year, power be granted the Executive Committee to dispense with the scientific meeting in 1944 if they see fit.

REPORT OF COMMITTEE ON RESOLUTIONS

Whereas the Louisiana State Medical Society has enjoyed a successful business meeting of the House of Delegates, and

Whereas the success of this meeting is due to the zealous and untiring efforts and splendid cooperation of several individuals and organizations,

We therefore offer the following resolutions of cooperation:

To Dr. Kernan Irwin, General Chairman of the Committee on Arrangements, for his generous and untiring efforts which have contributed greatly to the success of the meeting.

To the East Baton Rouge Parish Medical Society, host of the meeting, for their splendid cooperation and the excellent manner in which the convention was conducted.

To the efficient staff of the Secretary's office and the Secretary-Treasurer whose careful preparation of the details of the meeting contributed much to its smooth operation.

To Dr. Val Fuchs, Chairman of the House of Delegates, for the efficient and orderly manner in which he conducted the meeting of the House of Delegates and whose many efforts of the past have now elected him president.

To the Woman's Auxiliary of the Louisiana State Medical Society whose wholehearted support and interest added considerably to the meeting.

To the commercial exhibitors whose splendid co-operation is greatly appreciated.

To the press of New Orleans and Baton Rouge for their cooperation in giving publicity to the meeting.

To Mr. Luther Currie, Assistant Manager of the Heidelberg Hotel, and other personnel of the hotel for the many courtesies extended and for their cheerful and willing attention to the innumerable calls for assistance.

We recommend that a copy of these resolutions be incorporated in the minutes of the meeting and that a copy be published in the New Orleans Medical and Surgical Journal.

Respectfully submitted,

U. S. Hargrove, M. D., Chairman
W. P. D. Tilly, M. D.
E. H. Lawson, M. D.

REPORT OF COMMITTEE ON MEDICAL DEFENSE

There have been no cases of malpractice submitted to this committee for attention since the 1942 meeting of the Society.

Communications have been received from our Attorney concerning cases which have been pending and exceptions were filed in April, 1942 in a suit brought against a New Orleans member.

In the files of the Society is financial report of the Medical Defense Fund indicating amount in the savings account and the trust fund on January 1, 1943.

S. Chaille Jamison, M. D., Chairman.

THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

The Nominating Committee of The New Orleans Graduate Medical Assembly has nominated the following members for office for the year 1943-1944:

Dr. H. W. E. Walther, President-elect.
Dr. William B. Clark, First Vice-president.
Dr. James K. Howles, Second Vice-president.
Dr. Edgar Hull, Third Vice-president.
Dr. Joseph S. D'Antoni, Secretary.
Dr. Wm. H. Gillentine, Treasurer.
Dr. Gilbert C. Anderson, Director of Program.
Dr. Charles L. Brown, Assistant Director of Program.

Dr. Eugene B. Vickery, Assistant Director of Program.

Executive Committee

Dr. Edward L. King (one year term).
Dr. Dean H. Echols (two year term)
Dr. Donovan C. Browne (two year term)

The following officers elected in 1942 for the coming year are as follows:

Dr. Oscar W. Bethea, President.

Executive Committee

Dr. H. Theodore Simon (retiring president).
Dr. H. Ashton Thomas.

TULANE IVY DAY PROGRAM

The annual Ivy Day program of the Tulane University School of Medicine was held Thursday, April 29. The Ivy Day Address was delivered by Dr. Chaille Jamison, who spoke feelingly of the future of the medical profession.

It is a pleasure to announce that the Walter Reed Memorial Medal of the Louisiana State Medical Society was presented by Dr. Emmett L. Irwin, President of the organization, to Dr. Samuel Adams Trufant III, of New Orleans.

The Sidney K. Simon prize was won by Dr. Marcel Patterson, and Dr. William Duncan Davis, Jr. was awarded the Isidore Dyer Medal. Other prizes were obtained by Dr. Charles M. Wilson, Dr. Jerry B. Gwin, and Dr. George N. Irvine.

TOURO INFIRMARY MEDICAL STAFF MEETING

At the regular monthly meeting held Wednesday, May 12, at 8:00 p. m., the following program was presented. Dr. Gilbert Balkin discussed Leptospirosis; Dr. Evri Mendel gave a case report on the Surgical Treatment of Dysmenorrhea. The final paper was presented by Dr. Sam Simkin on Acute Osteomyelitis.

OCHSNER CLINIC STAFF MEETING

The Ochsner Clinic Staff meeting was held on Friday, May 21 at 8:00 p. m. The program consisted of the following presentations: Diagnosis of Paresis by Dr. George Leiby; Bilateral Recurrent Nerve Paralysis—Suture of Injured Nerves on Each Side. This was a movie film which was discussed by Dr. Penick. The third feature of the program was a movie demonstration of Combined Fusion of Lumbosacral Joint and Hemilaminectomy for Removal Herniated Disc, which was discussed by Dr. Dean Echols.

STAFF MEETING OF BAPTIST HOSPITAL

The regular monthly meeting of the clinical staff of the Southern Baptist Hospital was held Tuesday, April 27. The program consisted of a report of a series of cases of Thrombo Ulcerated Colitis by Dr. D. N. Silverman. The next paper was a report of a case of Adrenal Tumor Syndrome by Dr. T. C. Sherwood.

AMERICAN FEDERATION FOR CLINICAL RESEARCH

The New Orleans section met Wednesday, April 28, 8:00 p. m., at the Louisiana State University Medical Center, 1542 Tulane Avenue, New Orleans.

Program:

1. Recent Developments in the Diagnosis of

American Trypanosomiasis, by Harry Senekjic, M. D.

2. The Electrocardiographic Ischemia in Injury Pattern Produced by Temporary Occlusion of a Coronary Artery, by Robert H. Bayley, M. D., John S. LaDue, M. D., Dorothy York, B. S.

3. The So-called Diphtheroid Streptococcus from Cases of Subacute Bacterial Endocarditis, by Carl Lamanna, Ph. D.

MAES HONORED

Dr. Urban Maes was recently honored by his professional colleagues, being elected Vice-President of the American Surgical Association, which met early in May in Cincinnati, Ohio.

NEWS ITEMS

Dr. Chester A. Stewart, Director of the Department of Pediatrics of the Louisiana State University School of Medicine, left New Orleans on May 4, 1943, for St. Louis, Missouri, where he will attend a meeting of the board of the National Tuberculosis Association on May 5th and 6th. Dr. Stewart has been nominated director-at-large of the National Tuberculosis Association for a two-year term, beginning on May 6, 1943.

UNITED STATES PUBLIC HEALTH SERVICE

Asst. Surgeon W. H. Mills has been ordered from New Orleans to Galveston, Texas.

Past Asst. Surgeon E. A. Gillis has been ordered to New Orleans from Oklahoma City.

Asst. Surgeon C. C. Kuehn has been relieved from duty at Lake Charles and sent to the Beauregard Parish Health Unit at DeRidder.

Past Asst. Surgeon H. C. Phillips and Asst. Surgeon B. H. Raymond have been relieved from duty in New Orleans and ordered respectively to Mobile and to Washington.

Surgeon R. T. Westman has been sent from New Orleans to San Francisco, Calif.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Louisiana State Board of Health shows that for the week ending April 17 diseases reported in numbers greater than 10, and excluding syphilis and gonorrhea, showed that measles led the list with 84 instances, followed in order of frequency by 31 cases of pulmonary tuberculosis, 22 of cancer, 18 each of mumps and chickenpox, and 12 of influenza. Most of the cases of measles were reported from military sources. Of the rarer diseases, two cases of typhus fever were listed from Cameron Parish. In this particular week the report of the number of cases of gonorrhea and syphilis for the previous four weeks are recorded. There were 697 cases of syphilis, listed and 1,038 of gonorrhea. For the week which ended April 24, measles again led with 141 cases, followed by 48 of mumps, 56 of German measles, 21 each of pulmonary tuber-

culosis and chickenpox. There were 9 cases of meningococcus meningitis reported at this time. For the week which came to a close May 1, there were 40 cases each of measles and mumps, 19 of cancer, 16 of pulmonary tuberculosis, and 11 of chickenpox. Three cases of typhus fever were reported and two of meningococcus meningitis.

SHORTAGE OF LABORATORY ANIMALS

There is a serious shortage of laboratory animals for use in hospitals and medical schools. The War Production Board will probably be willing to give priority to materials necessary to raise small animals because the need is so great. Guinea pigs, rabbits, rats and frogs are all lacking. Particular difficulty is now being felt in obtaining cats for the purpose of assaying the potency of digitalis preparations. This is a standard method now required and cats are essential for the carrying out of the assay.

Physicians might interest some of their younger male patients in the breeding of some of these laboratory animals. It would be interesting and profitable.

FROM DEPARTMENT OF AGRICULTURE

The present shortage of glycerine and the necessity of issuing available supplies for essential war needs has made it necessary to deny the use of glycerine in many instances. Many former users of glycerine, who are now unable to secure supplies, are using substitute materials where they are available.

In a recent memorandum addressed to all consumers of glycerine we discussed the reasons for our inability to allocate glycerine to all users, as well as the methods for obtaining glycerine for approved end uses. We also mentioned in this memorandum the need of working out substitutes where possible. In using substitutes all consumers must investigate the toxicity of the substitute since it is an established fact that certain substitutes are definitely toxic. Among these toxic substitutes are:

Ethylene glycol
Diethylene glycol (diglycol)
Carbitol
Polyethylene glycol

and under no circumstance should these or toxic substitutes be used in any product whether food, drug or cosmetic which is likely to be taken internally or otherwise absorbed by external application.

Furthermore, a number of proprietary glycerine substitutes have been offered for sale and before using them, inquiry should be made of the manufacturer in order to determine whether or not any of the above compounds or other toxic substitutes are present. When in doubt as to the use of any of these substitutes in food, drug, or cosmetic preparations, inquiry should be made of the au-

thorities in charge of administering the Food, Drug and Cosmetic Law.

DOCTORS' HOUSEHOLDS URGED TO SET AN EXAMPLE IN WASTE FAT SALVAGE

The importance of saving waste household fats in order to salvage their glycerine content should be apparent to every physician. The doctor's kitchen, like that of every other family in town, can supply at least a tablespoonful of fat a day—from meat drippings, from rendered trimmings or fat skimmed from the soup kettle and no longer good for food. If that much were retrieved in every household and taken to the meat stores which collect the fat for the renderers, the amount saved would exceed the national goal of 200,000,000 pounds for 1943.

Glycerine is desperately needed to feed the United Nations war machine, and because many of America's outside sources of fats and oils have been cut off by the war. Glycerine has an important place on the medical front, in both war and peace. It is one of the best known and widely used medical materials. There is scarcely a branch of therapeutics in which glycerine does not play a part. An average of more than three pounds of glycerine per hospital bed per year is used in our American hospitals. And an analysis of 15,063 prescriptions made prior to the war in a single American city showed that, with the sole exception of water, glycerine was the most-used liquid ingredient.

In military medicine the role of glycerine continues to grow. Even before we entered the war, large quantities of glycerine were shipped by the American Red Cross to England. In the requests made to organized medical groups in the United States for medical supplies, British authorities rated glycerine as equal in importance to surgical instruments.

Practically all the liquid sulfonamides call for glycerine. The war has given increased emphasis also to the long-established value of glycerine itself in burn therapy and surgical treatment, as well as for wound dressings. Dressings can be changed with less discomfort to the patient when they are soaked with glycerine.

The War Production Board is urging all Americans everywhere to help save the fat from which this precious liquid is made. Doctors, set an example in your community: start YOUR household saving waste kitchen fat today: Waste Fat Saving Committee.

AN EDITORIAL

The following editorial from the Marion Chronicle was recently republished in a New Orleans daily. We feel that it is worth reproducing in the Journal. It shows that some people at least appreciate what the doctors in the present day are doing for their country.
Marion Chronicle:

The medical profession hasn't done a lot of talking about the "sacrifices" its members are making. And yet doctors, perhaps more than any other group next to the service men, are making real sacrifices in this war. Thousands of them have voluntarily given up their practices. They live in the fox holes with the soldiers. They fight and die with the navy and the marines. They perform miracles amid blood and suffering. Gone is the business for which they spent so many years in preparation, often on a financial shoestring. The doctors left at home are making sacrifices too. Men who should be enjoying the leisurely aftermath of useful careers are back in harness working at a killing pace. They are on duty 24 hours a day—and they don't yell for time-and-a-half when Mrs. Jones is having a baby at 3 a. m. The doctors are carrying out the tradition of American medicine in every emergency. Their example might well be followed by workers in other fields.

WOMAN'S AUXILIARY

The Third of May was an important, busy day for members of the Woman's Auxiliary who were fortunate enough to be in Baton Rouge for the one-day State meeting. Sixty-one members, exclusive of the Baton Rouge group, registered at convention headquarters at the Heidelberg Hotel, and were furnished transportation to the L. S. U. campus, where the business sessions were held in the handsome, impressive Law School building.

With Mrs. Clarence B. Erickson presiding in her efficient manner, the morning session was snappy and interesting with good reports given by officers and committee chairmen. At one o'clock we crossed the lawn to the Faculty Club adjoining the Law building and there, in a flower adorned lounge, were served a most delicious luncheon.

Mrs. Richard H. Clark of Hattiesburg, Mississippi, President of the Auxiliary to the Southern Medical Association, was an honored guest and made an impressive talk on plans of the Southern Auxiliary for the part of its members in the war effort. Mrs. Sam Houston Jones, wife of Louisiana's Governor, was also a luncheon guest and on being introduced extended a gracious invitation from Dr. and Mrs. J. D. Frazer of De Ridder, and from "Sam" and herself to all guests present to attend a reception at the Executive Mansion that night.

Others at the Speakers' table were Mrs. Erickson, Mrs. George Taquino, incoming president, Mrs. Aynaud F. Hebert, immediate past president, Mrs. Felix Boizelle, president of the East Baton Rouge Auxiliary, our hosts, and your scribe who served as toastmaster. Mrs. Arthur David Long of Baton Rouge, general chairman of the Convention, should have been there, but she was so busy seeing that every one else was having a good time, that she would not be seated. However, she was stopped, introduced, and given generous applause.

At the afternoon session, following more reports and a few business details, Mrs. Rhodes Spedale of Plaquemine was unanimously elected president-elect, to take office in 1944. The other officers will retain their present positions through the coming year with the exception of Mrs. C. R. Gowan of Shreveport. She resigned as she felt that Mrs. Taquino should have a treasurer from New Orleans.

Dr. Emmett Irwin, President of the State Medical Society, paid a brief visit to the Auxiliary, telling of his pleasure in working with them during the year, and of the plans made for a full-length convention next year.

At the conclusion of the business of Mrs. Erickson's administration, she inducted into office her successor, Mrs. George Taquino, who made a gracious little talk, bespeaking the loyalty and co-operation of all members and pledging her own best efforts to the work of the Auxiliary. Mrs. Taquino appointed Mrs. Paul LaCroix of New Orleans to succeed Mrs. Gowan as treasurer and Mrs. Walde-mar Metz, also of New Orleans, to serve as her corresponding secretary. It will be remembered that this is an appointive office, not an elective one.

At four o'clock the Baton Rouge Auxiliary entertained at a lovely tea and garden party in honor of Mrs. Taquino, at the home of Dr. and Mrs. Cecil Lorio on Dalrymple Drive. The guests lingered long, enjoying the chance to relax, to chat with friends, the cooling refreshments, and delighting in the beautiful home and garden of the hosts.

Many Auxiliary members attended the evening

session of the Medical Society and heard excellent, thought-provoking addresses by Dr. Irwin and Governor Sam Jones. Then both groups attended the reception so graciously tendered them by Governor and Mrs. Jones and their relatives, Dr. and Mrs. J. D. Frazer. Mrs. Frazer said she and the Doctor realized that the convention would probably never be held in De Ridder and they wanted that opportunity to entertain the doctors and their wives. A delightful courtesy it was, too, and one long to be remembered by those present.

So the 1943 one-day convention came to a close. It was a success in every way and Mrs. Boizelle, president, and Mrs. Long, chairman of entertainment, together with every member of the East Baton Rouge Auxiliary who worked so untiringly for our comfort and pleasure and that the business of the convention might go smoothly, have our sincere gratitude and appreciation.

So, too, ended the administration of Mrs. Erickson. Throughout a trying year she has guided the affairs of the group wisely as the record shows, and it has been a pleasure to work with her. Certainly no meeting over which Gertrude Erickson presided could ever be said to be dull.

Finally, this issue brings to a close the journalistic efforts of this writer. She thanks you for your patience and long-suffering. Mrs. M. C. Wigginton of Hammond will be your new chairman of Press and Publicity. Won't you kindly co-operate with her? Send her your items of interest and give her all the help you can, for after all, if you do not furnish the news she can not report it.

MRS. JAMES W. WARREN,
Chairman of Press and Publicity.

BOOK REVIEWS

Familial Nonreaginic Food Allergy: By Arthur F. Coca, M. D. Springfield, Ill., Charles C. Thomas Co., 1943. Pp. 160, 20 Tables, 12 Charts. Price, \$3.00.

Medical men and allergists have long suspected that many vague syndromes and clinical symptoms are essentially allergic in nature. This new method of approach that Dr. Coca has developed may throw new light on various conditions which we feel belong to this category. This book is short and well worth our reading, and is the result of many years of patient investigation by the author.

In his first chapter he distinguishes the following four categories of allergic disease:

1. Atopy. In this group he includes bronchial asthma, hay fever, and atopic dermatitis. In these three conditions "atopic reagins" are present.
2. Hypersensitiveness of infection.
3. Serum disease.

4. Contact dermatitis.

Dr. Coca suggests another category which he labels "Familial Nonreaginic Food Allergy". He differentiates this condition from the atopic variety by the following four main points:

1. The hereditary influence controlling its occurrence is independent of the atopic inheritance.
2. Allergic antibodies (reagins) are not demonstrable.
3. Many of the symptoms are not represented in the atopic group.
4. The allergic reaction practically always causes acceleration of the pulse.

He qualifies the title by stating that the excitants of the condition may not be foods but may be drugs, metals, or inhalants. He holds that a positive personal and family history, in the presence of a high maximal pulse rate (90 or more), and a wide range of the pulse rate (20 or

more), is characteristic of non-reaginic food allergy. He has observed that the pulse rate shows an increase after the ingestion of the food to which the patient is allergic. A strong familial tendency has been noted.

There is a large group of symptoms which he believes due to this variety of allergy, but to list them out in detail would make this review too lengthy. As an example, I might mention that he has helped many cases of migraine by the application of this method. Some of our so-called "intrinsic asthmatics" may fall into this group. Nervousness, urticaria, dizziness, neuralgia, indigestion, epileptiform seizures, are but a few of the many varieties. To sum it all up, I might make the observation that we now may be able to recognize many conditions as being allergic in origin which we had merely suspected of being so in the past. Many of the past failures of allergy have been due to the fact that our skin tests were not productive of helpful information. As an example, a patient may know definitely that certain foods cause migraine but the skin tests may have been entirely negative. By this method the allergic substances may be identified if the patient is shown to have non-reaginic food allergy. Dr. Coca has also done some interesting work to show the relationship of hypertension to this form of allergy. He considers that a primary cause of initial renal ischemia may be intracapsular pressure due to an allergic edema localized within the kidney. He studied a group of nine patients and observed a fall in blood pressure in seven of them.

The suggestion is made that a generalized allergic edema may be a predisposing cause in cold susceptible individuals.

Patients may be allergic to a large number of substances, and he distinguishes "Major" and "Minor" allergens. There is also a very interesting discussion on the value of histamine therapy in the treatment of these conditions.

The opinion has been expressed that the practice of medicine may be considerably affected by the findings of Dr. Coca, but it must be understood that this review is based on Dr. Coca's statements, and time and future work may change the viewpoints herein expressed.

HENRY D. OGDEN, M. D.

The United States Pharmacopoeia: 12th Revision; by Authority of the U. S. Pharmacopoeia Convention. Easton, Pa., Mack Print. Co., 1942. Pp. 880. Price, \$11.50.

The new revision of the U. S. Pharmacopoeia has become official from November 1, 1942. Volume and scope of the book make a brief review impossible, and those who are interested in details are referred to the paper by L. F. Tice and A. E.

Smith: "The New Pharmacopoeia" which appeared in the series "The Pharmacopoeia and the Physician" (Copyright, 1942, by American Medical Association). The revision contains over 650 medicinal items, of which about 160 are new additions. Over 80 articles which were listed in the eleventh revision are omitted in the new one, which is to be taken as indication of the trend towards fewer and better drugs.

GERHARD KATZ, M. D.

Burns, Shock, Wound, Healing and Vascular Injuries: Prepared Under the Auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Philadelphia, W. B. Saunders & Co., 1943. Pp. 272, illus. Price, \$2.50.

This volume which is number five in the series, contains a number of chapters on Burns, Shock, Wound Healing and Vascular Injuries.

The Surgeon General of the United States Army—James C. Magee, in the foreword to the volume gives an excellent summary on what may be expected. "The text presents in compact form essential up to date and reliable information regarding military surgery."

One can further agree to every word which General Magee says in the following lines:

"These volumes represent an important addition to the field of surgical texts."

Rear Admiral Ross T. McIntire, Surgeon General of the United States Navy in a foreword states:

"A volume such as this, which contains practical and essential things, readily accessible, is a real help to a medical officer and patient."

The text is well written, clear, and concise. This volume should serve as a ready reference for civilian surgeons, because it makes accessible a great deal of valuable information of varied character in a single small volume.

ISIDORE COHN, M. D.

Warwick & Tunstall's First Aid to the Injured and Sick: Ed. by Norman Hammer, M. R. C. S. 18th ed. Baltimore, The Williams Wilkins Co., 1941. Pp. 336. Price, \$2.00.

This, the eighteen edition of Warwick and Tunstall's First Aid to the Injured and Sick, edited by Norman Hammer, is an excellent volume as to text and illustrations.

The conclusions of War Gases, Air Transportation and special chapters on special types of bandaging, are particularly valuable.

As an advanced First Aid Manual, it is to be recommended highly. The charts, diagrams, and illustrations, are particularly valuable.

ISIDORE COHN, M. D.

After Effects of Brain Injuries in War, their Evaluation and Treatment: By Kurt Goldstein, M. D. New York, Grune & Stratton, 1942. Pp. 244. Price, \$4.00.

This book is an amazingly precise, profound and fascinating study of the consequences of brain injuries to soldiers. While caring for great numbers of injured soldiers, the author came to the realization that the customary investigative procedures were highly inadequate. In order properly to examine, treat and attempt to rehabilitate these men new methods were required. And his extremely valuable developments and technics are reported in this splendid survey of the subject which is unique and eminently practical.

Doctor Goldstein believes there is no evidence that individuals who have early attacks of convulsive seizures, following brain injuries, necessarily suffer later from seizures and that the prognosis from early attacks is more favorable. He reports that 50 per cent of his patients who had seizures, in the first week after injury, did not develop permanent seizures and if the first seizure occurred more than four years after the injury some other condition must be considered as its cause.

In the chapter on neurologic symptoms appears a discussion of the value of the consideration of the special mental capacity of "abstraction." And in the section on mental symptoms are important observations concerning functional and organic manifestations of head and skull injuries.

This is unquestionably one of the finest works of its kind thus written. It will exert great and profound influence on the opinions of all who deal with the sequelae of head injuries. I am quite impressed with the belief that anyone who has to do with examining, evaluating the status of and endeavoring to treat persons with brain injuries requires delicate synchronization of a vast amount of medical and surgical knowledge plus a keen appreciation of the influence of the human equation.

C. P. MAY, M. D.

First Aid, Surgical and Medical: By Warren H. Cole and Charles B. Puestow. New York, D. Appleton-Century Company, Inc., 1942. Pp. 351. Price, \$3.00.

This is a timely and comprehensive presentation of the subject of first aid and becomes particularly significant in view of the modern methods of warfare. The material is presented masterfully by 19 contributors stressing the precautions and limitations in first aid work in the introductory chapter. It is written so as to be of value to the medical student and the physician as well as persons "who have had biological, but not medical training. To furnish a background for some of the more complicated material," they "have inserted a chapter on Anatomy and Physiology early in

the text." It is significantly recognized that first aid administration is necessary by other than physicians and with the present mechanization of civilian and military existence combined with air attack immediate life saving measures are necessary. The book is a practical presentation with chapters on General Principles of First Aid; Common Conditions Requiring First Aid; The Material Needed; Bandaging; Wounds; Shocks; Blood Transfusions; Injuries to Large Blood Vessels; Burns; Frost Bites; Transportation of the Injured; Fractures, Dislocations and Sprains; Compound Fractures; Compound Dislocations; Gas and Bomb Raids; Respiratory Emergencies; Injuries of the Chest; Abdominal Injuries; Emergencies of the Genito-Urinary Tract; Wounds of the Mouth, Face, and Neck; Injuries of the Scalp, Skull, Spine, and Nervous System; Medical Emergencies; The Prostrate Patient; and Civilian Versus Military Casualties. "In general the emergency conditions related to the various systems are considered in Chapters arranged according to systems." The illustrations are excellent and the book is well written.

LEROY J. KLEINSASSER, M. D.

Athletic Injuries, Prevention, Diagnosis, and Treatment: By Augustus Thorndike, M. D., 2d Ed. Philadelphia, Lea and Febiger, 1942. Pp. 216. Price, \$3.00.

The monograph presents the author's experience over a period of six years at Harvard's Athletic Medical Department. The book is divided into three parts. Part I concerns the prevention of injuries in athletics; Part II considers the more common types of athletic injuries; and Part III reviews the more common regional injuries, their diagnosis and treatment. The consideration of physical fitness and the prevention and treatment of athletic injuries is justly receiving increasing interest of coaches, trainers, athletes, and physicians who deal with these athletes. The monograph is excellently written and organized with a consideration of the involved physiology and anatomy, including many statistical tables. The illustrations are diagrammatic but satisfactory. This monograph should be read by all physicians who have occasion to see and treat injuries of this type.

LEROY J. KLEINSASSER, M. D.

Diseases of the Liver, Gallbladder and Bile Ducts: By S. S. Lichtman, M. D., F. A. C. P. Philadelphia, Lea & Febiger, 1942. Pp. 889. Price, \$11.00.

A comprehensive presentation of various aspects of the hepatic and biliary systems, written by a qualified internist, is found in this well written volume. The book clearly presents, with diagrams and photographs, the present day knowledge of the anatomy, physiology, pathology, symptomatology, diagnosis and treatment of disease states affecting these organs. A great deal of space is devoted to

the methods of performing and the interpretation of liver function tests. Some of these methods are simple and valuable as office procedures, while others are elaborate and are definitely laboratory, or hospital procedures. The disease states also are discussed with particular emphasis on chronic hepatitis.

This is a good book for the student and practitioner to be used as a reference, or as an aid in diagnosis of treatment. The bibliography is well chosen and extensive, and includes key articles in English and other languages. The book has fulfilled its purpose as a comprehensive treatise on diseases of the liver and gallbladder, having covered these subjects adequately in 889 pages. The author has presented both the preclinical and clinical aspects of the subject, but has not lost sight of the fact that the book was to be used by clinicians and not primarily by physiologists.

The book is well printed, easily readable and is to be recommended as a source book, particularly for those who do not have access to original articles.

TRAVIS WINSOR, M. D.

The Principles and Practice of Medicine, originally written by Sir Wm. Osler Bart, M. D., F. R. C. P., F. R. S.; By Henry A. Christian, A. M., M. D., LL. DD., Hon. Sc. D., Hon. F. R. C. P. (Can.) F. A. C. P. 14th Ed. New York, D. Appleton-Century Company, 1942. Pp. 1475. Price, \$9.50.

The fourteenth edition of Osler's *Medicine*, representing the semi-centennial issue of a medical classic has now appeared. The first edition was written fifty years ago by William Osler while Physician-in-Chief of the Johns Hopkins Hospital in Baltimore. Revisions were made by him while Professor of Medicine at Oxford, assisted after 1912 by Thomas McRae, then Professor of Medicine at Jefferson Medical School in Philadelphia who revised the tenth, eleventh and twelfth editions. In 1938 the 13th edition appeared under the editorship of Henry A. Christian, then Hersey Professor of the Theory and Practice of Physic at Harvard University. Thus the editorship has passed from one distinguished physician to the next. The book is almost unique among present texts in that it is written by a single author rather than a group of specialists. It is unquestionably true however that Christian has a specialist's knowledge of each of the medical specialties and thus keeps each subject abreast of the new developments. He feels that anyone who cannot duplicate his prodigious energy and amazing memory is merely lazy. All in all the book is excellent and its early luster is preserved undimmed.

VINCENT J. DERBES, M. D.

Advances in Internal Medicine: Edited by J. Murray Steele, M. D. New York, Interscience Publishers, Inc., 1942. Pp. 292. Price, \$4.50.

This is a perfectly splendid "informal summary" of recent progress in the field of internal medicine. The book is under the editorial control of Dr. J. Murray Steele and associated with him is a group of seven of the outstanding internists of the United States.

The list of contents includes subjects in which there have been distinct advances in the past few years. There is an article on the Miller-Abbott tube, another on the use of insulin and protamine insulin in the management of the diabetic patient, two on the sulfonamides, one on the infections of the urinary tract and a very splendid contribution on the sympathetic nervous control of the peripheral vascular system. The articles on epidemic infections, nephrosis and riboflavin deficiency are most instructive and well presented. A comment should be made also on the elucidating article by Page and Corcoran on hypertension, the experimental work of which the former has guided and led, and which is summarized in a clear and orderly fashion. This review by Page is well worth the attention not only of the internist but of every physician who comes in contact with the hypertensive patient.

Interscience Publishers are to be congratulated on this volume, one of a series of books which will bring the busy doctor up to date in the several branches of medicine and more particularly the special fields in which he is not always able to keep up with current medical literature, that is in the realms outside of a man's particular specialty in medicine.

J. H. MUSSER, M. D.

Mental Illness: A Guide for the Family: By Edith M. Stern, with the collaboration of Samuel W. Hamilton, M. D. New York, Commonwealth Fund, 1942. Pp. 134. Price, \$1.00.

This book fulfills a specific, long existent need. It serves to shape the thinking families who must meet the problem of mental disorder, and decide upon treatment, hospitalization, convalescence and re-socialization.

Mrs. Stern has drawn from her experience with patients, their families, their physicians, and her knowledge of circumstances as they exist, in contradistinction to the ideal, the material with which to write this book; yet she has written it with a constructive, mellow, realistic attitude.

Every physician should have this book on his desk and bring it to the attention of relatives who are bewildered, distressed and uninformed, but none the less must make decisions about some member of their families. The reviewer cannot recommend the book too highly.

T. A. WATERS, M. D.

Clinical Anesthesia: By John S. Lundy, B. A., M. D. Philadelphia, W. B. Saunders Co., 1942. Pp. 771. Price, \$9.00.

The need for an up-to-date book on anesthesia has existed for some time. The appearance of *Clinical Anesthesia* by John S. Lundy, is therefore a timely one.

Anesthesia has made many rapid strides in the last ten years in the introduction of new drugs and technics of administration. Dr. Lundy describes these currently used drugs and technics in his book. Regional, spinal, and local infiltration technics for various types of operations are described in the first third of the book. Inhalation, and rectal, and intravenously-administered drugs and technics are the concern of the remainder of the book. Intravenous fluid therapy and inhalation therapy are also discussed.

Dr. Lundy has made no attempt to review the entire literature of anesthesia but has compiled the subject matter mostly from his own experiences and his associates' at the Mayo Clinic. The volume is very well illustrated.

The book will be of interest to physicians who are preparing themselves for anesthesiology.

JOHN ADRIANI, M. D.

The Hospital Care of the Surgical Patient: A Surgical Handbook. By George Crile, Jr., M. D., and Franklin L. Shively, Jr., M. D. Springfield, Ill., Chas. C. Thomas Co., 1943. Pp. 184. Price, \$2.50.

Evarts Graham in his foreword establishes the position of this one hundred and eighty-four page book, "Hospital administrators and chiefs of surgical services will find it profitable to recommend it to their surgical house staffs." In the preface the authors state their purpose which briefly is to standardize routine hospital procedures and principles of preoperative and postoperative care as applicable at Cleveland Clinic Hospital. The reviewer is impressed with the need for such a publication and the sincerity of the authors.

Many of our well managed hospitals have an equivalent compilation, usually mimeographed and annually revised, varying in authenticity, which in such individual instances is better applicable to their situation. However, most institutions do not find such an arrangement possible; these and our many smaller hospitals will do well to add this small volume to their interne library.

A glance at the table of contents illustrates the reference ease. The physiology of fluid balance is covered without mystification. Complications to surgery are nicely handled. Technic of routine hospital procedures are outlined and are, in most instances, of universal application.

The section dedicated to the relationships of the house officer is a well presented treatise on hospital psychology and ethics. This portion of the

book alone will be profitable reading for any interne.

The authors in their departure from surgery into the realms of medical complications occurring in a surgical patient have not handled the situation well. Many a cardiologist will question the use of intravenous aminophyllin for coronary occlusion. The criteria of diagnosing uncomplicated pneumonitis by its response to the sulfonamide preparations is not well accepted.

In addition to this criticism one finds a void of incompleteness in that many of the surgical specialties in which the house staff care is essential are not considered. The care of ileostomies and colostomies is superficially mentioned relegating this most important subject to nursing care. The use of protein powders, where aluminum paste fails, deserves mention.

Here and there the reviewer finds a suggestion he questions such as the use of saline purgation in the preparation for colonic surgery; perforation in malignancies might thereby be produced and such should therefore be practiced with a little more reservation.

Admittedly hypercritical, I bring attention to deficiencies of this work. Its qualifications are more apparent, it is an exemplary aid to any hospital house officer; as such it will be well accepted and serve its purpose well.

GORDON MCHARDY, M. D.

Care of the Aged (Geriatrics): By Malford W. Thewlis, St. Louis, C. V. Mosby Co., 1942. Pp. 589. Price, \$7.00.

Because the present state of affairs must of necessity include the aging in the framework of totalitarian war and since the future envisions a nation of elders, the study of the aging, or geriatrics, has assumed a position of prime importance among physicians. In a field that has as yet been comparatively little investigated and in which modern factual data are still punctuated by large areas of no or at best impressionistic ideas, uncorroborated by scientific proof, books on the subject of geriatrics are noteworthy by their fewness. But these few are quite good and among the best is this fourth edition of Thewlis, first published in 1919. It is really an excellent addition to the armamentarium of the geriatrician and one senses that in the years to come when the study of the senescent shall grow in importance and value, it will be found both elementary and in great part erroneous. This should not be chalked up to the discredit of the author. He can only record the wisdom of the day and add to it the results of his clinical experience. It is well worth reading and employing in treating the oldsters. His style is lovely and he has correctly sensed the broad outlines essential in warding off the ravages of time and place and living to the full despite the handi-

caps bestowed by age on the senescent and senile organism. The author roams over a wide field in his discussion, delving into the economic, legal, social, and medical aspects of longevity. The book format and index are good. All in all, Thewlis has made a worthwhile revision to a subject growing in importance by leaps and bounds.

I. L. ROBBINS, M. D.

The Anatomy of the Nervous System: By S. W. Ranson, M. D., Ph. D. 7th Ed. Philadelphia, W. B. Saunders Company, 1943. Pp. xxi + 520, figs. 408. Price, \$6.50.

Favorably received since its first publication in 1920, the present seventh edition of this work on neuroanatomy calls for no detailed description. It is a superior text-book, noteworthy for close correlation of structure and function, lucid style and abundance of excellent illustrations.

The revision was completed shortly before the death of the distinguished author. The publisher's foreword announces that Doctor Ranson had arranged for revision of the book, in the event of his decease, by Doctor Sam L. Clark. The future of the text is therefore assured, and an ably revised eighth edition may be expected in due time.

The current edition is an improvement over its predecessors. Before preparing it the author solicited suggestions from teachers of neuroanatomy, and these suggestions have been followed insofar as was feasible. One of the author's prefatory comments in this connection is of particular significance: "It has not been possible to comply with the many requests for a fuller discussion of the extrapyramidal motor paths. These requests must be regarded as a challenge to research. Very little is known on this subject and some ideas which have been generally accepted are certainly fallacious." At many points physiological considerations are amplified. The sections most extensively revised concern cerebellum, thalamus, hypothalamus, cerebral cortex and sympathetic nervous system. With regard to the last, and the related discussion of components of craniospinal nerves, the unfortunate terminology of "general" and "special"

visceral efferents is retained. Illustrations of the sheep's brain, formerly scattered in the body of the text, are now brought together in the back—a distinct benefit to users of the book whose study is confined to the human brain.

HAROLD CUMMINS, Ph. D.

PUBLICATIONS RECEIVED

Lea & Febiger, Philadelphia: A Manual of Otology, Rhinology and Laryngology, by Howard Charles Ballenger, M. D., F. A. C. S. Urine and Urinalysis, by Louis Gershenfeld, B. Sc., P. D., Ph. M., D. Sc.

Charles C. Thomas, Springfield, Illinois: A Manual of Pulmonary Tuberculosis (Part I) and an Atlas of Thoracic Roentgenology (Part II), by David O. N. Lindberg, M. D., F. A. C. P. Physiology in Aviation, by Chalmers L. Gemmill, B. S., M. D., Commander, MC, USNR, with a chapter on Instrument Flight by Lieutenant Frederick B. Lee, USNR.

The Jaques Cattell Press, Lancaster, Pa.: Physiological Regulations, by Edward F. Adolph. Biological Symposia, edited by Jaques Cattell, Volume IX, Sex Hormones.

The Peter Reilly Co., Philadelphia: War Injuries of the Chest, edited by H. Morriston Davies, M. Ch., F. R. C. S. and Robert Coope, M. D., F. R. C. P.

Research Publishing Company, Chicago and Los Angeles: Fundamentals of Endocrinology and Practical Endocrinotherapy, by Dr. Max R. Rubinstein.

The Commonwealth Fund, New York: Clinical Significance of the Blood in Tuberculosis, by Gullih Lindh Muller, M. D.

The MacMillan Company, New York: Hope Deferred, by Jeanette Seletz.

Alfred A. Knopf, New York: Man in Structure and Function, Volumes I and II, translated from the German and edited by George Rosen, M. D.

The Louisiana Historical Quarterly: Charles Aloysius Luzenberg, 1805-1848: A History of Medicine in New Orleans during the Years 1830 to 1848, by A. E. Fossier, M. D., Vol. 26, No. 1, January, 1943.



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